

MUNICIPAL JOURNAL

ISSUED

WEEKLY

VOLUME XLV
No. 8

August 24, 1918

\$3.00 a Year
10 Cents a Copy

More than paid for itself in one year

OTTERSON AUTO- EDUCTOR



The letter below speaks volumes for the Auto-Eductor.

If this does not convince you that your city needs this equipment, write us and we will send you more proofs in black and white.

The Ottersson Auto-Eductor Co.

817 Fairbanks Bldg.
Springfield, Ohio

DEPARTMENT OF ENGINEERING
LOUISVILLE, KY.

March 28, 1918.
File 611

D. R. LYMAN
Chief Engineer

OTTERSON AUTO EDUCTOR CO.,
Fairbanks Bldg., Springfield, Ohio.

Gentlemen:

Answering your recent inquiry concerning our experience with the Auto Eductor purchased from you in January, 1917, I would say that the machine has proven eminently satisfactory in every respect. We are securing a better class of work than was possible under hand cleaning methods. We are handling the work much more expeditiously and at a great saving in expense.

During the first twelve months that this machine was operated, the actual operating expense, including labor, fuel, and repairs, has averaged 62c. per basin. The machine has cleaned 5,500 basins, which represent a total operating expense of \$3,410. Previous to the purchase of this machine, hand cleaning averaged \$3.40 per basin, which would represent an expense of \$18,700 on the 5,500 basins cleaned during the past year.

The Auto Eductor has consequently effected us a saving of \$15,290 in twelve months' time. These figures did not in either case include any allowance for depreciation. If 20% be allowed for annual depreciation, the average cost per basin would be increased to 86c. and the total annual saving decreased to \$13,970, but it is worthy of note that even under this method of accounting the machine has more than paid for itself in one year's time.

Yours very truly,
D. R. LYMAN,
Chief Engineer.

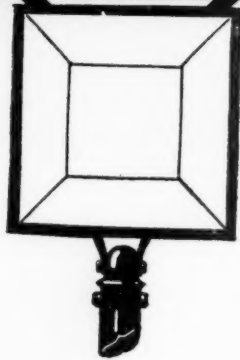
DRL/Mc

62 Cents

Average Cost Per Basin

That REAL Danger Signal that attracted your special attention and made a lasting impression is ours

DANGER



The Red Signal at Danger Points

Works Automatically Day or Night

No maintenance cost—

no electric bulbs to be broken—no oil or gas lamps to blow out—proof against weather conditions—never fails to warn approaching vehicle carrying lights—At Night, This Signal Picks Up White Rays From Your Headlight and Reflects Them Red, a sure, unfailing warning signal.

If you want to know more about this scientific invention, that's as simple as it is effective, send for illustrated folder and prices.

The Automatic Signal and Sign Company

407 Rex Avenue, Canton, Ohio

First "Merriman" Plant (built 1905) Still in Operation

Hamilton, Ohio, December 10, 1916.
EAST IRON & MACHINE CO.,
Lima, Ohio.

Gentlemen:

In reply to your letter of December 16, 1916, asking what our experience has been with the "Merriman" one-car asphalt plant, we have had a "Merriman" one-car plant in use for twelve years and during that time it has turned out over 1,500,000 square yards of binder and top ready to lay. Its best asset is that it will run six days in a week. We have owned two "Merriman" plants since 1909, and they turn out from two to three hundred thousand square yards of material every season. Yours truly,

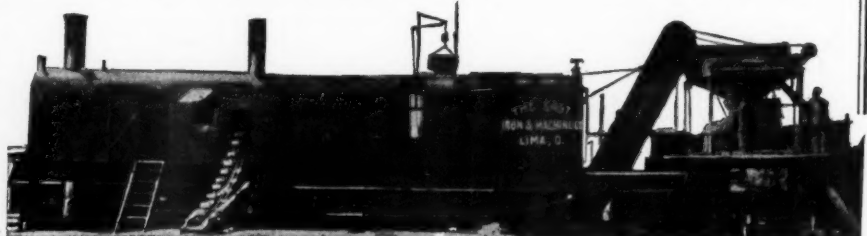
THE ANDREWS ASPHALT PAVING CO.,
W. N. Andrews, President.

Write for a list of users and ask them about the Merriman.

Read what its owner says after using the Merriman Plant for 10 years!! The recommendations of Mr. Andrews are verified by his purchase of a second plant. The Merriman Steam Melting Plants are built as one car; Road Asphalt and Stationary Plants.

East Iron & Machine Co.

Lima, Ohio



Can be laid on old macadam, concrete, old brick, rolled stone or slag foundations.

An Asphaltic Concrete Pavement with pulverized slag as chief mineral aggregate. An economical roadway of proved success.

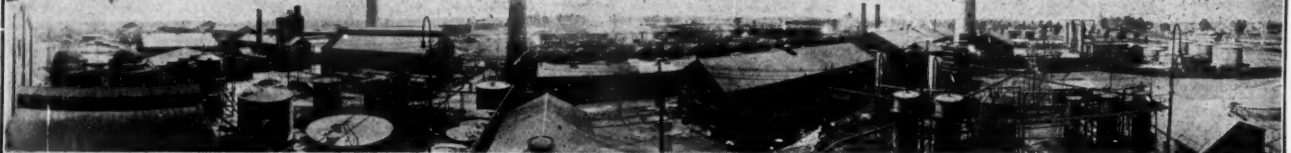
BITOSLAG

Reg. U. S. Patent Office
The Pavement That Wears Like Iron
BITOSLAG PAVING COMPANY
90 WEST STREET, NEW YORK

Our experts will give full information as to the proper preparation of the mixture, and testing from time to time free of charge.

Correspondence invited.

WHERE "INDIAN" ROAD OILS ARE MADE. INDIAN REFINING CO., LAWRENCEVILLE, ILL.



Municipal Journal

Published Weekly by MUNICIPAL JOURNAL & ENGINEER, Inc., at 243 West 39th Street, New York

S. W. HUME, President.

J. T. MORRIS, Treasurer and Manager.

A. PRESCOTT FOLWELL, Secretary

Subscription Rates:

United States and possessions, Mexico and Cuba.....\$3.00 per year All other countries\$4.00 per year
Entered as second-class matter, January 3, 1906, at the Post Office at New York, N. Y., under the act of Congress of March 3, 1879.

Volume XLV

NEW YORK, AUGUST 24, 1918

No. 8

CONTENTS OF THIS ISSUE

Sewering an Army Cantonment (Illustrated)	141
For sewerage Camp Bowie, Fort Worth built twelve thousand feet of large sewer in forty-five days, including a river crossing. Machinery was used to a large extent.	
Trenching Machinery in Laying Water Pipe	142
The Freeport Water Company, in laying seventeen miles of water main, found that a trenching machine more than paid for itself. The facts are given by the secretary and superintendent of the company, Owen T. Smith .	
The "National" Pavement in New Haven (Illustrated)	143
Used in resurfacing over old macadam and brick pavements in the streets of that city.	
Auto-Eductor Solves Tank Difficulty	145
Septic tanks at cantonments became filled with sludge and scum, which other pumping appliances were unsuccessful in removing.	
Proposed Borough Plan for St. Louis County	146
Replacing Cuts in Concrete Pavements	147
Water Works Operation	147
Service connections—corporation and curb cocks, goosenecks, cellar shut-offs and other appurtenances of connections.	
Editorials	149
Adapting Education to War Conditions—Cantonment Sewage Treatment.	
Street and Sewer Work in Cincinnati	150
Fred Maag, superintendent of the street department, gives unit costs of all the activities of the department during 1917.	
Street Work in Newport	150
Figures from the annual report of street commissioner John F. Sullivan concerning street sprinkling, dust laying and quarry operation.	
The Week's News.	
Roads and Pavements	151
War Department Pays Share for Camp Road, Washington, D. C.—Court Sets Aside Acceptance of Badly-Built Road, Portland, Ind.—Commission Restrained from Reletting Abandoned Work, Albany, N. Y.—Suspend 8-Hour Law on Capital Sidewalk Construction, Washington, D. C.	
Sewerage and Sanitation	151
Utilities Commission Allows Higher Sewerage Rates, Burlington, N. J.—City Authorities Cooperate on Venereal Disease Fight, Washington, D. C.—One in Community Refuses Vaccination—Gets Typhoid, Salem, N. C.	
Water Supply	153
Company Allowed to Collect Meter Rates, San Francisco, Cal.—Denver Votes for Municipal Ownership—Rates for City Increased, Consumers Decreased, Berkeley, Cal.	
Street Lighting and Power	154
Saving Due to Lightless Nights, Washington, D. C.—To Build Big Plant at Coal Mine, Pittsburgh, Pa.—Charles E. Hughes, Referee, Allows Higher Gas Rate, New York, N. Y.	
Traffic and Transportation	155
No Direct Government Relief for Street Railways, Washington, D. C.—Detroiters Refuse to Pay Six Cents—Increase Abandoned—Public Trustees for Chicago Railways—Five-Cent Fare in Cleveland—Court Upholds Commission's Rate Power, Indianapolis, Ind.	
City Planning and Housing	156
Steel Company's New Housing Plan, Youngstown, O.—Vast Housing Plans for "Most Congested District," Norfolk, Va.—Dormitories for Navy Yard Workers, Washington, D. C.—Big Artillery Center for War Department, West Point, Ky.—Halls for Housing Employees in Capital, Washington, D. C.	
Legal News—Notes of Recent Decisions	157
News of the Societies	158
Problems Cities Are Studying with Experts	158
New Appliances (Illustrated)	159
Industrial News	159
Contract News	21

Cheaper Drilling

Cut down the labor and time of drilling rock in your road, street or quarry work by ordering a

SULLIVAN "ROTATOR"

These ONE-MAN, powerful, handy hammer drills are capable of light or heavy work, and operate on steam or air.

Here's one block-holing ahead of a steam shovel.

Write for new Bulletin No. 3370-F

**Sullivan
Machinery
Company**

122 So. Michigan
Ave., CHICAGO



POWER TAMPING

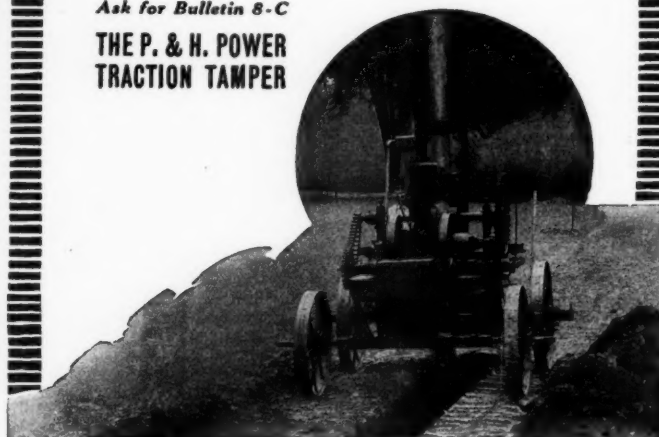
means

- permanent backfilling
- lower tamping costs
- faster and regular work

PAWLING & HARNISCHFEGER CO.
MILWAUKEE WISCONSIN

Ask for Bulletin 8-C

**THE P. & H. POWER
TRACTION TAMPER**



VITREOUS PORCELAIN ENAMELED IRON STREET SIGNS HOUSE NUMBERS TRAFFIC SIGNS SAFETY FIRST SIGNS LICENSE TAGS

GUARANTEED AGAINST FADING, TARNISHING, RUSTING
HIGH QUALITY-REASONABLE PRICES-PROMPT DELIVERY

THE ENAMEL PRODUCTS CO.
CLEVELAND, OHIO

WYCKOFF PIPE & CREOSOTING CO.
30 East 42d St., NEW YORK
Send for Catalogue "D"

CREOSOTED WOOD BLOCKS

WYCKOFF
WYCKOFF CONDUIT for WILL NOT BUCKLE OR DECAY
underground wires, and
all forms of creosoted wood;
also Wooden Water Pipe and Steam Pipe
Casings. Creosoting Works and Factory: Portsmouth, Va.

SERVICE FIRST!
**IRONSTONE
BLOCK**
REPPRESSED OR
DUNN W RE-CUT-LUG
Terre Haute Vitrified Brick Co., Terre Haute, Indiana

DON'T KNOCK—
We are progressing. If you don't believe it, just apply and get a job running one of the new "Victory Motors," and if you LAND SAFE, drop us a line and say you are READY to place your order for the

MATHEWS DIRECTION
STREET
TRAFFIC **SIGNS**

White Plains, New York



THE ELGIN

The machine that sprays, sweeps and collects.
Driven by a motor.

ELGIN SALES CORPORATION
New York Chicago

Ransome CONCRETE
EQUIPMENT
RANSOME CONCRETE MACHINERY CO.
1754 Second St., Dunellen, N. J.
Branches and Agencies in all Principal Cities

LEHIGH CEMENT
NATIONAL
DISTRIBUTION  REPUTATION

700,000,000 Million Gallons of
PURE WATER

furnished by
Pittsburgh Filter Plants



FILTRATION PLANT, WACO, TEXAS

Nearly 175 Cities Supplied

BIG PLANTS WITH DAILY CAPACITIES RANGING FROM ONE HALF MILLION TO 160,000,000 GALLONS.

Gauges, Controllers, Operating Tables, Hypo. Plants. Everything for Pure Water

Manufactured by

PITTSBURGH FILTER MFG. CO.
KANSAS CITY, MO. PITTSBURGH, PA.

**CONSERVATION OF
LIFE AND HEALTH**

is even more important than the conservation of food.

You can eliminate illness and death from Typhoid and other water-borne diseases by applying



to your water supply. The average yearly cost to those "Wise Cities" now using it with complete satisfaction is only 2 cents per capita.

Send for our booklet, the "Wise Cities." It contains many interesting facts from other cities, large and small, which prove that safe water is a paying investment.

ELECTRO BLEACHING GAS CO.

Manufacturers of Liquid Chlorine

19 East 41st Street, New York

Branch Office: Lumber Exchange Bldg., 12 LaSalle St., Chicago

Pacific Coast Representative:

California Jewell Filter Co., Merchants Exchange Bldg., San Francisco

Canadian Representative:

General Supply Co., Ltd., Ottawa, Toronto, Montreal, Winnipeg

Eighth Edition (20th thousand) of

SEWERAGE

The Designing, Constructing and Maintaining of Sewerage Systems and Sewage Treatment Plants

By A. Prescott Folwell, Editor of Municipal Journal, Past President of the American Society of Municipal Improvements and Member of the Society for the Promotion of Engineering Education.

For twenty years this has been the recognized authority on American sewerage practice. It has been revised every two or three years, in the meantime, but for this edition the author has entirely re-written it, bringing it up to date in all respects.

473 pages, 6 x 9; 80 illustrations.
Price \$3.00

ORDER FROM
MUNICIPAL JOURNAL
243 W. 39th St., New York City

**APPROVAL
HERSEY DETECTOR METER**

The Hersey Detector Meter has been accepted for thirteen years in 3, 4, 6, 8, 10 and 12" sizes without any restrictions or conditions of any kind by every Insurance Company, Stock and Mutual, doing business in the United States, and by the Water Departments and Water Companies in more than 600 Cities and Towns for use on over 4,000 Fire Services protecting over \$2,000,000,000. worth of Insured Property.

HERSEY MANUFACTURING COMPANY

BOSTON NEW YORK CHICAGO COLUMBUS, O

PHILADELPHIA ATLANTA SAN FRANCISCO

Hotel Cumberland

New York, Broadway at 54th St.



Broadway cars from
Grand Central
Depot

7th Ave. cars from
Pennsylvania
Station

**Modern and
Fireproof**
Strictly First Class
Rates Reasonable

ROOMS WITH ADJOINING BATH
\$2.00 up

ROOMS WITH PRIVATE BATH
\$2.50 up

SUITES

\$4.00 up

Ten Minutes' Walk to Fifty Theatres

— Send For Booklet —

HARRY P. STIMSON FORMERLY WITH
HOTEL IMPERIAL
Only New York Hotel Window-Screened Throughout



Performance



Jamestown, N. Y., Fire Department with American-LaFrance Equipment

Performance is what Counts.

It isn't what we say our apparatus can do—it is what fire chiefs say our apparatus does.

Be it hill climbing, straight away, or pumping, American-LaFrance motor fire apparatus can be depended upon to give the maximum performance when and where it counts most.

Years of experience building fire apparatus, years of experimental engineering applied to mechanical improvements, and superior workmanship have established a foundation on which American-La France records stand unshaken.

AMERICAN-LAFRANCE FIRE ENGINE COMPANY, INC.

Elmira, New York, U. S. A.

Member of the National Automobile Chamber of Commerce
Licensed under the Dyer Patents

BRANCH SALES OFFICES AND SERVICE STATIONS

New York Boston Chicago San Francisco Portland, Ore. Dallas
Los Angeles Atlanta Denver Pittsburgh Baltimore Minneapolis

Canadian Factory: Toronto, Ont.



Blueprints

The Wickes

Continuous Electric. Sells at
half the price. Uses half the
current of others. Per-
fect prints up to 48" in
width and of unlimited
length.

Wickes Bros.

Department E
Saginaw - Mich.

COTTON RUBBER LINED **FIRE HOSE**
Wax and Para Gum Treated
MILDEW AND ROTPROOF
FABRIC FIRE HOSE MANUFACTURING CO.
Cor. Duane and Church Streets NEW YORK

"Equipment Bargains"

Means
Bargains for YOU

See Page 33

Books on Water Purification

Elements of Water Bacteriology.

By S. C. Prescott and C. E. A. Winslow.

Is in its third edition. Contains about
270 pages, and while it pretends to deal
with only the elements of the subject, these
elements are treated in a thoroughly scien-
tific manner by experts on the subject.
Price, \$1.75.

The Value of Pure Water.

By George C. Whipple, of Harvard
University.

The purpose of this book is to illustrate
the fact that impure water affects not only
the health and comfort of a community,
but also the pocketbooks of the people. It
contains 80 pages and sells at \$1.00.

ORDER FROM

MUNICIPAL JOURNAL

243 West 39th St., New York

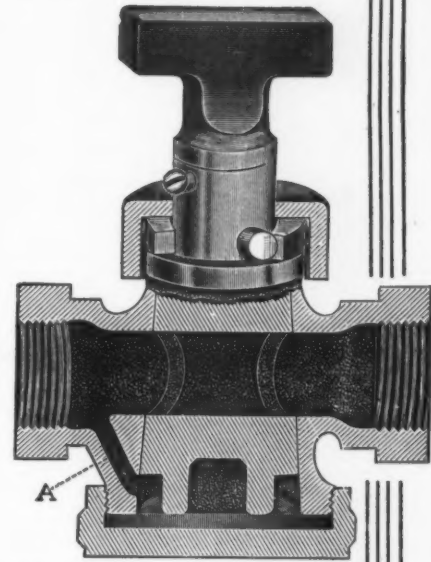


5 YEARS— and why!

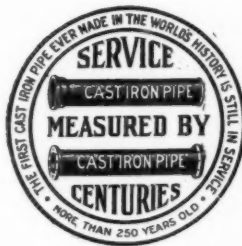
How is it that Glauber Brass is guaranteed for 5 years? Read—Take the GLAUBER INVERTED KEY CURB COCK shown here, for instance—the large end of the Plug or Key at the bottom tapers upwards—a feature that makes it absolutely impossible for the plug to stick or become set. And even after years of service underground, this cock can be turned as easy as the day it was put in, avoiding all danger of twisting and breaking off heads.

Glauber Inverted Key Cocks have DOUBLE CHECKS, one on either side, giving double protection against excessive pressure being exerted when turning the cock. A single check might be sheared off—two checks such as we provide are sure to hold. This is only one of the many ways in which we provide RESERVE STRENGTH.

Write for our catalogue—keep it for reference.



Just Write "GLAUBER-CLEVELAND"



The Cast Iron Pipe Publicity Bureau

1 BROADWAY

NEW YORK

Manufacturers of

CAST IRON PIPE

BELL AND SPIGOT

FOR WATER—GAS—CULVERTS—SEWERS

Also Flexible Joint Pipe—Cylinders—Tubes, Milled and Plain Ends—High Pressure Fire Service Pipe—Special Castings. Flanged Castings a Specialty.
Quality and Service Guaranteed

FLANGED PIPE

Warren Foundry & Machine Company

Offices, 11 Broadway, N. Y. 201 Devonshire St., Boston, Mass.
Works, Phillipsburg, N. J.

UNIVERSAL PIPE

The Modern
Hub and
Spigot Pipe



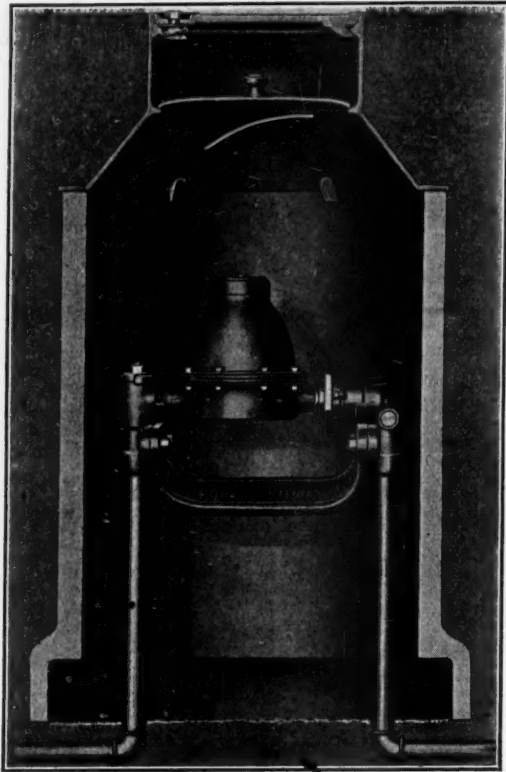
Pipe and
Joint are
'One'

The Universal Joint is Cast Iron, meaning long life. It is absolutely tight and is not affected by vibration, settlement, contraction or expansion. Made up with no other equipment than a ratchet wrench, the Universal Joint is permanently tight, leak proof, durable and flexible.

Prepare for the day when you will want that pipe line in a hurry by sending for descriptive literature today.

THE CENTRAL FOUNDRY COMPANY 90 WEST STREET
NEW YORK, N. Y.
SALES OFFICES: NEW YORK, CHICAGO, ATLANTA, DALLAS, SAN FRANCISCO, KANSAS CITY, MO.
FOUNDRIES: BALTIMORE, MD.—LANSDALE, PENN.—NEWARK, N. J.—MEDINA, N. Y.
ANNISTON, ALA.—DESSMER, ALA.—HOLT, ALA.—VINCENNES, IND.

U-268



A Meter Well Bought is Not Half Set

We believe that the curb is the only logical place for a water meter, for the following reasons:

- A.—Meter is safe from frost damage.
- B.—Meter is safe from tampering.
- C.—Consumer is always at home to reader and in consequence inspector will read many more meters per day than with basement settings.
- D.—The reader is relieved of any temptation to record fictitious readings because of consumer's absence from home.
- E.—The liability of admitting a burglar under guise of a meter reader is avoided.
- F.—All water entering property is registered and leaks on inside piping will be promptly repaired.
- G.—Meter is less liable to damage from hot water backing up from range boiler when located at curb.
- H.—Ordinary curb box and curb stop may be done away with if desired.

There are a lot of other reasons and meter boxes are cheap. Write us.

FORD METER BOX COMPANY, Wabash, Indiana

LAMBERT DISC METERS

FISH TRAPS AND EXTENSION DIALS

Illustrated Price List
and description
on application

THOMSON METER CO.

100-110 BRIDGE ST.
BROOKLYN
N. Y.



METER RATES

By Allen Hazen, S. D., an exhaustive work dealing with the whole problem of deciding upon an equitable charge for water for all purposes.

Bound in cloth—217 pages—\$2.25

Order from

MUNICIPAL JOURNAL

243 West 39th Street, New York City

Municipal Journal

Volume XLV.

NEW YORK, AUGUST 24, 1918

No. 8.

SEWERING AN ARMY CANTONMENT

Rapid Work in Construction at Camp Bowie, Texas—Nearly All Trenching Done by Machinery—Plows, Scrapers, Steam Shovel and Back-Fillers—Segment Block and Lock Joint Pipe Used.

The necessity of completing in a short time the sewer to serve Camp Bowie, located at Fort Worth, Texas, led to the employment of various machines and devices to save labor, and also to the employment of more than three hundred men. The whole work, which comprised the construction of nearly 12,000 feet of main sewer, ranging from 27 to 48 inches in diameter, in addition to constructing the camp laterals and a river crossing, was completed in 45 working days.

Up to the time this system was put into use, Camp Bowie was unsewered. The ordinary liquid wastes from the camp were discharged through open ditches into the surrounding country, without any attention beyond the camp limits. This resulted in gross nuisances and threatened several damage suits.

The sewer as planned was to intercept all wastes from the camp except from the base hospital, the wastes from which are already cared for by a small Imhoff plant, supplemented by sand filters and chlorination. From the

camp, nearly a mile of 27-inch segment-block sewer was built eastward, crossing the Trinity river and connecting with a 3400-foot stretch of 36-inch sewer, also segment-block. This stretch carries some of the city sewage and ties onto another section of the same length, 48 inches in diameter. This line, which is of lock-joint concrete pipe, will be a main artery in the city's future system. It discharges the sewage at a point near the proposed site of the city disposal plant.

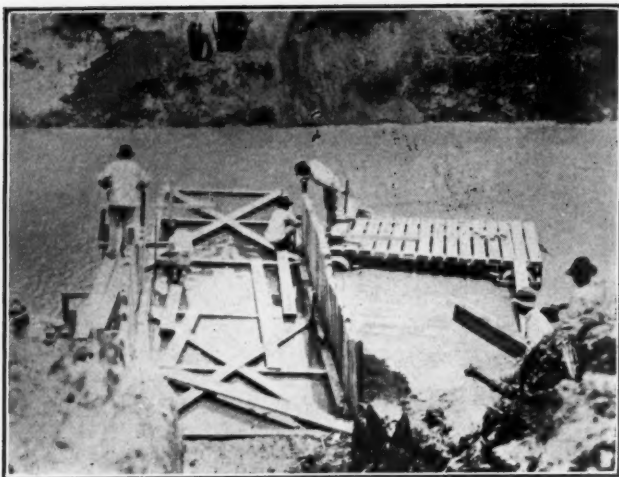
Practically all the trenching was done by machinery. On the smaller sections, mules and scrapers were used exclusively, except for finishing work. With ordinary scrapers drawn by one pair of mules each a trench with sharp straight edges was cut to a depth of 6 or 7 feet. Plows were used to loosen the soil and ramps placed every 100 feet or less allowed the scrapers to run out of the ditch to dump. These ramps were later removed by hand and the bottom of the trench brought to finished grade.



LAYING 48-INCH PIPE THROUGH BATTERCAKE FLATS.



BOTTOMING OUT TRENCH DUG BY STEAM SHOVEL.



BEGINNING THE RIVER CROSSING.

On the sections requiring large and deeper trenches, a Thew Type O steam shovel equipped with a lengthened boom was used. This was successful. An average of about 75 feet of trench seven feet wide and 13 feet deep was completed daily—about 200 cubic yards. Hand finishing on the bottom was necessary here also.

Hand trenching was used to some extent within the camp, though ditching machines were employed on a great deal of this work also. Hand work was also necessary in trenching through a large dump, where old stones, ancient automobiles, bed springs and other obstructions proved too much for the steam shovel.

Little bracing was needed. The soil of Texas near Fort Worth is usually of such a character that a ditch with vertical walls will stand indefinitely. Through the dump and in a few other places it was necessary, however.

The river crossing was made at a point where there was little current. In fact, except in times of high water, the Trinity river carries very little water and the flow is practically nothing in dry weather. However, a heavy rainfall when the crossing was but partly finished, did sweep away all vestiges of the work. As soon as the waters had receded, however, work was commenced on another cofferdam.

The cofferdam was constructed of 2-inch piling, lapped with one-inch boards on each side to form a tongue and groove joint. These were started by hand and driven by steam hammer to bed rock. This was found usually not more than 6 to 10 feet below the river bottom. It was, however, very irregular and it was impossible to make a tight joint with the piling. The very porous gravel and sand overlying the rock yielded considerable water and pumping was somewhat of a problem. A 6-inch steam pump and two 3-inch gasoline pumps were used to keep the cofferdam dry. All excavation was done by hand. The sewer was carried under the river through an inverted syphon of 24-inch cast-iron pipe.

Mechanical means were employed in back-filling also. Hand methods were used until the pipe was covered, when teams with scrapers and back-fillers were used. The teams worked on the side of the trench opposite to that in which the dirt was piled and hauled the scraper by a long chain.

The work, which cost in the neighborhood of \$80,000, was done by the General Construction Co. The segment blocks were furnished by the W. S. Dickey Co., Kansas City, Mo. The lock-joint pipe was some left over from the construction some time ago by the city of the Lake Worth conduit.

TRENCHING MACHINERY IN LAYING WATER PIPE.

By OWEN T. SMITH.*

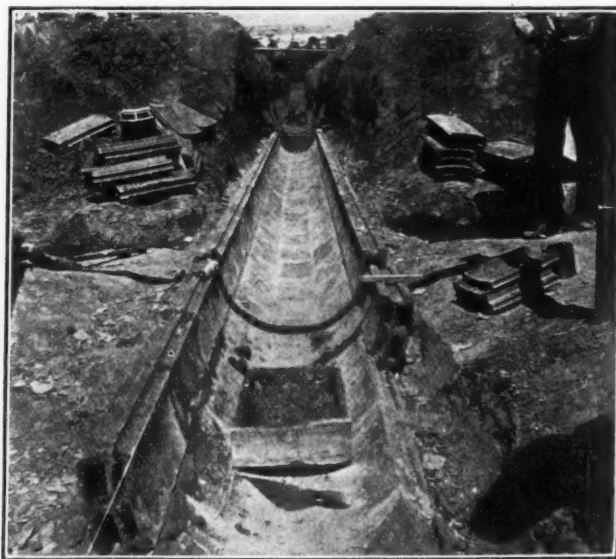
The Freeport Water Company of Freeport, Illinois, a few years ago found it necessary to lay about seventeen miles of new mains four inches to sixteen inches in diameter in order to comply with franchise requirements. The conditions due to a scarcity of labor were such, combined with the necessity of performing the work in a short period of time, that it was determined to endeavor to solve the difficulties by the use of machinery. Careful estimates of cost of machine trenching as compared with hand trenching showed that the advantage lay with trenching machines provided one could be purchased at a reasonable price. After some search, a second-hand Buckeye machine was found that seemed to meet the requirements and was purchased, and the results have been so satisfactory that we consider that the price of the machine was saved more than twice over in the laying of the seventeen miles.

In digging trenches in macadam pavement, the machine was used to pull a breaking plow to break up the surface layer, which saved a large amount of labor with pick and shovel. Also, the machine was used to roll the surface of the macadam pavement after it was replaced. Two men operated the machine, a runner and a fireman. As an example of the comparative cost of the two methods, at one time it became necessary to replace some of the boiler flues, so the gang that was at work laying pipe and refilling the trench was kept at work excavating by hand and laying pipe in the old way. During the days when the machine was out of commission one block was laid, and when the machine was again in commission, the same gang with the machine laid exactly four times as much in the same length of time.

Depreciation and repairs on the machine while at work were charged to the various jobs as part of the cost of construction work, and it is now considered that the machine has paid for itself and owes us nothing and it is carried on our accounts at a nominal figure.

A tamping machine was purchased because numerous stretches of mains were to be laid under brick and other pavements, and after trial was found to be satisfactory because the refilling was thoroughly tamped with a much heavier hammer than could be used by hand. In

*Secretary and superintendent of Freeport Water Company, Freeport, Illinois.



LAYING SEGMENT BLOCK SEWER NEAR CAMP BOWIE.

a number of blocks where the tamping machine was used in back-filling, the brick pavement was replaced and is still in good shape after four years' use without any further repairs. This machine is operated by a gasoline engine mounted on wide-tired wheels far enough apart to bestride the ditch and is propelled and operated by two men. (Machines are now made that are self-propelling with the operator riding and operating the machine.) The great advantages in its use were the uniformity obtained in refilling the trench and the rapidity with which it could be done.

After experimenting with it, the use of "leadite" was determined upon, on account of the labor saved in digging bell holes and calking joints. Nearly all of the mains were tested before refilling the trench and no more joints were found defective than was common in using lead caulked joints, if as many. The comparative cost with either "leadite" or "metallium," was about one-half as great as with lead. So far as removing leadite or metallium joints is concerned, it is much easier than removing lead, as those metals are more brittle and more easily worked.

THE "NATIONAL" PAVEMENT IN NEW HAVEN.

Resurfacing Over Old Macadam and Brick Pavements—Method of Mixing and Laying—Restoring Pavement Cross-Section.

The city of New Haven, Connecticut, last year for the first time laid a pavement known as the "National," 28,000 square yards having been laid on three streets, all of which carry heavy traffic. Of these streets, two, Wallace and Sachem, were resurfaced over old macadam, the macadam having first been brushed clean but not scarified. The third street, Ashmun, was a brick pavement on a concrete base which had worn hollow in the middle. (The resurfacing of this pavement is shown in the accompanying illustrations.)

In addition to these large contracts, there were some small areas covered, one of these being at the intersection of Chapel and Orange streets. The former of these is the principal traffic street of the city, and this intersection will be subjected to a very severe test. Orange street was paved with Sicilian rock asphalt twenty-two years ago, and except at this intersection this old pavement has carried a fairly heavy traffic without any repairs whatever except where cuts were made to reach underground pipes. When the old rock asphalt surface was removed last year it was found to be worn down to about a one-half inch thickness, and it is believed that a considerable part of that still remaining is little, if any, thicker than this; yet there have been no instances of the surface breaking away from the base.

This durability of the rock asphalt pavement is considered to promise well for the "National," because of the similarity between them. An inspection of the New Haven pavement made by the writer last month, seven or eight months after it was laid, showed a very great resemblance between the rock asphalt pavement and the new pavement, and city engineer Frederick L. Ford (to whom we are indebted for the information in this article) states that he considers that in density and strength there is a great similarity between the two, the principal apparent difference being that the "National" pavement is darker in color than the Sicilian asphalt, owing to the fact that the former contains more asphalt than the latter and also probably because the clay used in making the new pavement is darker in color than the limestone rock

which enters into the composition of the Sicilian rock asphalt. He says that the newer pavement also seems to have more resiliency than the older (although this may possibly be due partly at least to the compacting which has been effected by the many years of traffic over the rock asphalt), and that it is less slippery than the rock asphalt, although no complaints concerning the slipperiness of the latter have been made for many years.

This season 4,600 square yards of "National" pavement is being laid on Mechanic street, 8,225 square yards on Edwards street, and 4,600 square yards on Mansfield street. Mechanic street is an old dirt road and the new pavement will include a 6-inch concrete base with a 2-inch wearing surface. The bids received for this street were \$3.37 and \$3.22 for asphalt and \$3.61 for "National" pavement. Edwards street is an old water-bound macadam road and on this there will be a 1½-inch surface with a binder course nominally 1½ inches thick. Two bids for sheet asphalt on this street were \$2.03 and \$2.05 respectively, and that for "National" pavement was \$2.27. On this street worn places in the crown, some of them three inches or more deep, will be brought up to a uniform surface by stone and sand thoroughly rolled and compacted. Mansfield street is now an old cinder street and in this case also the pavement will include a 6-inch concrete base.

The general features of the "National" pavement were described in our issue of October 5, 1916, but may be repeated briefly as follows:

The pavement is composed of about 18 per cent asphalt and 82 per cent pulverized earthy matter, 50 per cent of more of which passes through a 200-mesh sieve, about 20 per cent passes through a 100-mesh sieve and the balance passes out through the larger screens, nothing being retained on a 10-mesh screen. There are no particles larger than this in the pavement, consequently none to be broken or crushed by traffic of any kind or weight. Owing to the fine pulverizing of the mineral matter, the asphalt used can be both greater in amount and of higher penetration than that used for sheet asphalt. (Asphalt of about 90 penetration is used, while for the sheet asphalt laid in New Haven the penetration is about 55.) It is generally considered in constructing sheet asphalt that longer life is secure by increasing the amount and penetration of the asphalt, the amount used being limited by the necessity of not making too soft a pavement. An additional advantage claimed for the "National" pavement is that any thickness of wearing surface can be laid and made thoroughly compact and homogeneous by laying and rolling it in successive layers, since these layers will become thoroughly bonded together, while the laying and rolling in thin layers insure a maximum consolidation.

In the New Haven work the contractors, the Franklin Contracting Company, 52 Vanderbilt Place, New York, located the mixing plant close to a railroad siding, and



OBTAINING SOIL FOR NATIONAL PAVEMENT AND GRADING STREET AT SAME TIME.

uses the earthy material from a knoll about a thousand feet away. The material used consists of loamy top soil and clay. Since the clay forms by far the largest proportion of the material, it might have been more economical to place the plant close to where the clay is obtained and haul the asphalt; but this year it is practically impossible to obtain asphalt in barrels, but it is delivered in tank cars, and by having the plant close to and several feet below the siding, the asphalt can be drawn off by gravity directly into the tanks of the plant.

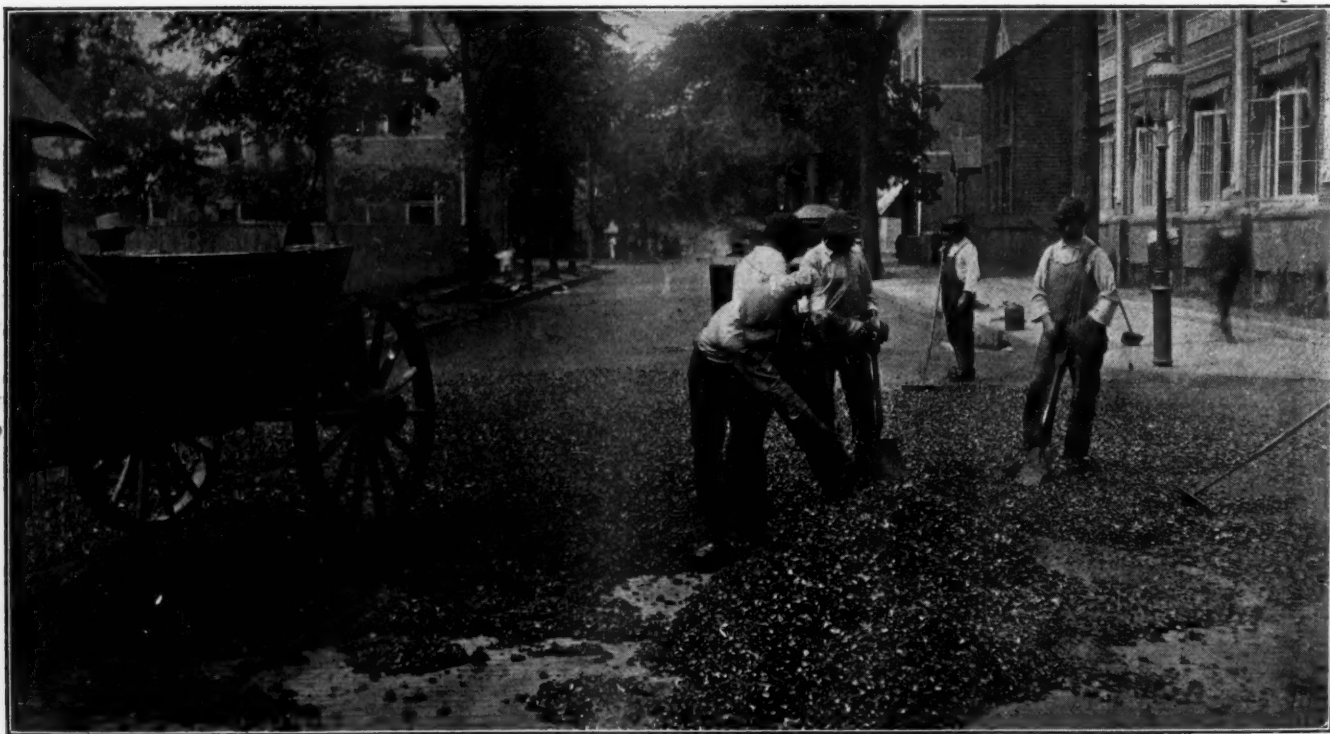
The mixing plant has a rated capacity of about 1,200 square yards of 2-inch top per day, but the contractors believe that under normal conditions it is capable of mixing 1,500 square yards and the clay for this can be furnished by six men shoveling and four or five teams hauling the clay in bottom-dump wagons to the plant, which sits about twenty feet below the roadway. A short trestle from the road extends past the boot of the bucket elevator which feeds the clay to the mixer. In this roadway is an opening about two and a half feet square filled with a grating of steel bars which prevents the horse's from falling into the opening and screens out large stones, roots and other materials. The material so dumped drops through the grating onto a pile two or three feet from the boot of the bucket elevator. About 20 feet from this grate is another grating in the roadway which is ordinarily covered, but which is used in emergencies as is explained later.

As a sheet asphalt mixing plant, this plant would have a capacity of 1,800 square yards a day, but the speed is so reduced as to cut the capacity down somewhat. The reason for this is that more time is required for drying the clay than for drying sand, both because the clay originally contains more moisture than sand (about 18 per cent moisture under average conditions as compared to 8 or 9 per cent moisture in sand), and also because it yields the moisture less readily. Also, the clay needs to be heated to 600°, while the sand in a sheet asphalt plant is ordinarily heated to only 400°. The principal reason for this is that about 20 per cent of the clay, being mostly

that which will pass through the 200-mesh sieve, passes up through the flue which removes the hot air from the drier and is caught in a dust collector and conveyed to the same outlet as the rest of the clay, but in passing through the long flue and collector the temperature of this portion falls to about 150° and cools the balance of the clay with which it is mixed. An electrical pyrometer is connected near the outlet end of the heating cylinder, the indicator being fixed near the bottom of the clay elevator within full view of the man who feeds this with a hand-shovel. If the pyrometer shows a drop in temperature below 450°, the clay is fed into the elevator more slowly, while if the temperature rises above 450°, the clay is fed in more rapidly. After a rain, when the clay contains more moisture, or when it is frozen, it is given a preliminary heating in an auxiliary drier which consists of a long steel cylinder provided with interior flanges around the circumference, which is revolved so that the clay is lifted by these flanges and dropped when near the top of the cylinder. The cylinder is set at a slight slope so that the clay works gradually from the higher end to the lower. An oil burner is placed at the lower end and the heat from this passes through the cylinder to the upper end. This auxiliary drier is placed under the roadway trestle and when it is in use the wet clay is dumped through the other grating referred to above, forming a pile near the upper end of the auxiliary drier, into which the clay is shoveled by hand.

In constructing a complete pavement including a concrete base, no binder course is used with the "National" pavement, but a 2-inch wearing surface is laid directly on the concrete, being rolled in two 1-inch courses. When this kind of surface is placed on old brick or macadam pavement, a 1½-inch binder course is used, serving to fill up depressions and give a uniform surface, and on this is laid a 1½-inch wearing surface.

When it first enters the drier, the clay passes through a pulverizer consisting of an outer and inner cylinder, the inner of which makes about 400 revolutions a minute and carries on its outer circumference flanges that throw



SPREADING BINDER ON BRICK PAVEMENT—ASHMUN STREET.
Top surface being rolled in background.

the clay against the outer shell and thus break it up and thoroughly pulverize it. The pulverized clay and the heated asphalt are discharged into the mixer by means of two automatic weighing buckets of ordinary construction used for sheet asphalt, are mixed for about a minute, and from the mixer are discharged directly into a wagon below.

City Engineer Ford, discussing general conditions in New Haven, says that in resurfacing old brick and macadam streets a number of difficulties are encountered, chiefly those connected with the cross-section. Some of the brick pavements have been worn down to such an extent that the center of the roadway is an inch or two lower than the gutter; while, on the other hand, many of the macadam roadways have a higher crown than would be desirable or even safe with a smooth asphaltic pavement. These old pavements are used as a base with as little disturbance as possible, since it is realized that it is impossible to so consolidate a new base by any practicable amount of rolling as to make it as free from further settlement as an undisturbed pavement would be. Where two or three inches of additional binder course will secure a reasonably high crown over a brick pavement or a reasonably flat crown in the case of a macadam one, this method is adopted. Where the objectionably high crown cannot be remedied in this way, however, the shoulders or low spots in the macadam roads are built up by covering with stone and sand and flushing and rolling this thoroughly. Where this would raise the gutter too high, leaving less than two or three inches of exposed face of curb, the alternative of scarifying the high crowns and lowering them somewhat is adopted. In one or two streets resurfaced during the past year, not more than two inches of curb shown above the gutter, but in these cases the sewer inlets are so close together or so near the apex points in the street contour that practically no water will flow in the gutter.

There are a number of streets where this method of resurfacing over brick and concrete pavements would be adopted, except for the fact that there are street railway tracks in the streets and it is impracticable to place even an inch and a half on top of the existing pavement, since the pavement has not worn down more than a half-inch and the result would be a surface standing at least an inch above the rails; while to raise the rails and their foundations would involve almost as much work as to

take out all of the roadway preparatory to constructing an entirely new pavement.

AUTO-EDUCTOR SOLVES SEWAGE TANK DIFFICULTY.

Removal of Enormous Amount of Greasy Scum and Sludge from Septic Tank That Had Resisted Other Pumping Appliances.

The disposal of sewage at the various cantonments has introduced a number of interesting problems, some of which have proved themselves quite difficult of solution. Many of the camps have already been used by a larger number of recruits than apparently was anticipated and, in addition to this, the nature of the sewage at the camps is so different from that found in many municipal sewage treatment plants that the cantonment plants operate in a manner different from that ordinarily experienced where sewage is treated.

One of these, which is believed to be typical of a number of cantonments, is the plant at Camp Meade which was visited by the writer recently. This camp has a nominal capacity of 45,000, but there have already been as many as 49,000 training there at one time. The amount of water used has reached a maximum of about 3,000,000 gallons, averaging about 2,000,000.

The sewage of the camp is carried from the barracks through a 24-inch pipe, which discharges it into two septic tanks of the type designed by Capt. L. S. Doten specially for the army camps. Each tank is 25 feet 6 inches wide and 100 feet long and is divided into four tanks by three weirs extending upward from the bottom. Each section of tank has a hopper bottom, the slopes of which are 6 feet 6 inches high, above which are vertical walls about 6 feet high to the surface of the sewage. For removing sludge from the tanks, a steel pipe is set in each compartment, the pipe having an opening a few inches above the bottom and passing through the side wall about 2½ feet below the level of the sewage; the sludge being discharged through these by the hydrostatic pressure of the sewage. These pipes connect to a sludges outfall, from which the sludge is discharged through a number of valve-controlled outlets into trenches dug in the sand which composes the soil of the locality. The



LAYING NEW WEARING SURFACE ON OLD BRICK PAVEMENT—ASHMUN STREET.
Chalk line on right curb shows how curb height is reduced by adding new surface.

first compartment of each septic tank is also provided with a vertical pipe connected by a Y with the sludge pipe at the bottom, which vertical pipe is provided with a rod to be used for clearing away any matters which might choke up the mouth of the sludge pipe.

These septic tanks were first put into operation last November and have therefore been in operation eight or nine months. During this entire period there has not, the engineers state, been evident a single indication of septic action, no bubbles appearing upon the surface of the sewage in the tanks. In the meantime a considerable part of the suspended matter has collected in the tanks until, about July 1st, the first compartment in each tank was filled almost solid with sludge and scum, there being only a foot or two passage way for the sewage. The solid material collecting in the second compartment was eight or nine feet deep, that in the third compartment was less, while in the fourth compartment there was about three or four feet of scum and very little sludge. Of the eleven or twelve feet of scum and sludge in the first compartment, about seven feet was scum or floating material. This enormous amount of floating matter is apparently accounted for by the fact that the sewage is very fresh, the larger particles not being broken up to any appreciable extent, and by the fact that it contains an unusually large amount of grease. Analysis of the scum showed that grease constituted fully fifty per cent of the total solids therein. There are no grease traps connected with any of the kitchens, and a great deal of soap is used, as most of the soldiers probably take a bath at least once a day and some of them oftener. One of the reasons suggested for the failure of the sewage to undergo septic action is that all of the particles become thoroughly coated with grease.

Another cause of difficulty in operating the tanks has been the considerable amount of sand that finds its way into them. Few of the streets are paved in any way, and some sand probably finds its way into the sewer through the manholes. It is also believed that, in the hurried construction, a number of leaking joints were left in the sewers, through which sand enters. It is also probable that considerable sand is washed from the bodies of the thousands of men when taking their daily shower baths. Whatever the cause, the first compartment of each tank was found to contain several feet of solidly packed sand. Intermingled with this were numerous matters not supposed to reach the sewers, such as discarded articles of clothing, baseballs, burlap sacks, etc. The result has been that no amount of rodding or other treatment enabled the operators to make the sludge flow out of the first compartment, and difficulty was experienced with the other compartments also.

By July it was found necessary to take some immediate measure for cleaning out the tanks and endeavoring to remedy some of the defects and secure septic action while the warm weather lasted. Centrifugal pumps, diaphragm pumps, and other contrivances were tried, but all were unsuccessful in removing the thick, greasy material mingled with large pieces of clothing and other articles. In this extremity it was suggested that a trial be made of an Otterson "auto-eductor," which had been used successfully by a number of cities for cleaning catch-basins, but whose use for pumping out sludge tanks was something of a novelty. At the request of the quartermaster, one of these ran down to the camp from Ohio under its own power and immediately set to work. Some change was necessarily made in the arrangement of the eductor, as it was not desired to discharge the sludge into the tank on the truck provided for receiving catch-basin deposits, but instead the sludge was discharged through about three hundred feet of wrought

pipe into sludge channels dug in the sandy soil. Water for diluting the scum and sludge was drawn by the eductor directly from the sewer. Aside from these changes, the apparatus used was the standard catch-basin equipment.

From the beginning the eductor operated satisfactorily. Both scum and sandy sludge were sucked out rapidly and with very few intermissions in operation. Clothing, sacks, etc., were taken through the suction and discharged without difficulty, but occasionally a baseball would stick in the throat of the eductor, or a board or stick would have to be removed from the opening.

In removing this scum and sludge, the material is made more liquid by the application of sewage through a pipe directly at the suction end of the intake pipe of the eductor, although the amount of diluting sewage is not large, being supplied through a 1-inch pipe. Even though the tanks were enlarged, the other conditions of freshness of sewage and abundance of grease would probably continue to prevent liquefaction of the suspended matters, and periodic operation of the eductor will probably be continued for maintaining the amount of sludge and scum within reasonable limits.

In order to diminish the odor caused by the stirring up of the scum and sludge when pumping it, crephenol in a proportion of 1 part to 500 parts of water was added to the sewage as it left the eductor for softening up the scum and sludge. This greatly reduced the odor, and during the writer's visit it was only faintly perceptible fifty or one hundred feet away from the tanks. One reason for this probably was that the matter in the tanks was not stirred up in any way except immediately at the mouth of the discharging pipe, and it was sucked into this pipe immediately. When visited by the writer on July 26, all of one tank had been cleaned and the two further compartments of the second, and the scum was being removed rapidly from the second compartment. As a result of this experience, an eductor has been purchased for Camp Meade and it is possible that several of the other camps will be provided with them.

PROPOSED BOROUGH PLAN FOR ST. LOUIS COUNTY.

The county annexation committee of the Civic League, of St. Louis, Mo., has been studying the proposal by which the city would annex the territory of St. Louis County, and has issued the following report:

1. Annexation of the entire St. Louis County, including all the cities and towns located therein. Such annexation would prove of value not merely to St. Louis city alone or to the county alone, but to both. Every city should have control of its future physical development, and St. Louis can only maintain such control through an ever widening possession of contiguous territories. In this way alone can it secure, as its population increases, breathing and recreational places and the extension of thoroughfares and other physical planning in conformity with the plan of the city as a whole and with the future needs of the city and of the adjoining individual localities. St. Louis County, which (with its various cities and towns) is bound today to St. Louis by every tie except political connection, and its consequent advantages will obtain a uniform and high fire and police protection, a much better sewerage system, cheaper and better water, improved health regulations, and many other advantages of this nature. A consolidated government will also in the long run mean a marked economy for the tax payers of the county.

2. The annexation scheme to be based on the borough system, allowing legislative and administrative autonomy to annexed communities on certain questions. There is beyond doubt a number of advantages which the annexed communities in the county would be obliged to sacrifice temporarily under a general scheme of annexation which would not allow to them some amount of local autonomy. Under that form of the borough system which insures local

legislative autonomy (as in the charter of Los Angeles) certain of these advantages, such as control of saloons and other moral conditions, might be continued in the local communities. Agricultural districts might also be set aside, with special taxing and appropriation features. We believe that, at this time, such a scheme is absolutely necessary for a just and satisfactory plan of annexation.

3. Right of choice insured to both the city and the annexed territory through a vote on the question. No permanently satisfactory arrangement for annexation can be made without the full consent of the inhabitants of the territory annexed, expressed by a majority vote in favor of the annexation plan submitted at an election for that purpose.

4. Amendment of the state constitution to make the borough system possible. Under the provisions of Article 9 of the constitution respecting St. Louis the creation of borough government in connection with this city is impossible. In order to allow St. Louis and other large cities in Missouri to expand and at the same time guarantee local advantages to the communities annexed, we believe the 1919 legislature should propose to the people an amendment of the constitution elastically providing for borough government if cities desire to create the same. Such a provision has been best worked out in the constitution of the State of California.

The committee, of which L. Wade Childress is chairman, recommends that the league interest other organizations in the city and throughout the state in the constitutional amendment suggested, so that proper information be laid before the legislature at its next session.

REPLACING CUTS IN CONCRETE PAVEMENTS.

A method of replacing cuts in concrete pavements that it claims will give as good service as the original pavement and not mar the appearance is described by the "Concrete Highway Magazine" as follows:

"The cut should be carefully made. A sledge hammer and pointed steel chisels should be used to make the opening which is enlarged to the proper size, caution being observed so that the concrete adjacent to the opening will not be cracked. The edges of the cut must be kept as even as possible.

"Another method is to use a cold cutter of the type employed for cutting steel plates, using a light sledge hammer; the opening desired is outlined and then marked thoroughly to a depth of about 1 to 1½ inch. A cold chisel is used to make a hole through the pavement after which the outlined section is knocked out with the sledge. If the outline cut is deep enough (about 1½ inches for a 6-inch slab and 2 for an 8-inch slab) no trouble is experienced. The chief danger of such an operation is that the concrete adjacent to the opening may be fractured in such a way as to require a larger repair than is necessary for the excavation underneath.

"The backfilling must be given particular attention and the excavated material carefully tamped into place. The edges of the cut slab should then be thoroughly washed and kept wetted until a considerable amount of water is absorbed. The concrete for the patch is mixed to as near the proportions of the original pavement as possible. The opening is filled with the stiff mixture, tamped and finished with a heavy belt, or better a board cut to fit the adjacent surface of the original part. The patch should be covered with earth, sprinkled daily for a period of ten days, when the earth may be removed; but traffic should be kept off the patch for four days longer at least.

"If these suggestions are followed there will be no difficulty in replacing any openings that may be necessary in a concrete pavement. However, particular attention should be given to having the mixture used for the patch similar to the original concrete, and to see that the edges of the opening are cleaned thoroughly and saturated with water before the patch is placed, and all traffic barred while the concrete is hardening."

SAN DIEGO'S PURCHASING BUREAU.

The purchases for the several departments of the city government of San Diego, Cal., are made through a single purchasing agent; and as the Operating Department makes more extensive purchases than any other, the purchasing agent has been placed under the manager of operation, and this is reported to have worked out very successfully in 1917.

During that year the Purchasing Bureau spent about \$650,000 for materials and supplies, covering 8,062 claims, and \$897,074 for labor, covered by 865 payrolls. Purchases made direct for the storeroom totaled \$64,479, while the sales from the storeroom totaled \$65,492. At the end of the year 1917 the stock on hand in the storeroom was inventoried at \$90,830, of which about two-thirds was pipe.

The bureau operated one 3-ton and one 4-ton Packard truck, for which it charged at the rate of \$1.75 per hour of actual time worked; this bringing in \$6,753, while the expense of the service was \$4,520.

The bureau operated a print shop which turned out \$4,105 worth of work during the year.

An asphalt plant was installed during the year, being completed the latter part of September at a cost of \$2,600. In three runs aggregating 38 days the plant turned out 26,592 square feet of two-inch asphalt pavement surface, at a cost of 25 cents per cubic foot. Of this, 15,504 square feet was laid by the Street Department and 11,088 square feet was sold to the San Diego Electric Railway Company.

An accurate record of all work performed by the Operating Department is kept by the "General Office," which also has charge of water meter readings and the making and collecting of water bills. The cost of commercial expense in connection with the water bills averaged about 5 cents for each bill collected.

WATER WORKS OPERATION

Service Connections—Importance of Using Such Materials and Methods as Will Minimize Need for Repairs—Corporation Cocks—Curb Cocks—Cellar Shut-Offs.

In a closely built up community where all houses are connected to the water mains, there are more miles of house connections than of mains. As each of these connections contains two or three appurtenances, as they are often laid by careless or inexperienced plumbers, and as it seems necessary to lay them of some material other than cast iron, it is not to be wondered at that they cause a superintendent more trouble than any other part of the system. The most common forms of trouble experienced are leaks, stoppages and freezing, the latter often resulting in splitting of the pipe.

Most service connection troubles involve digging up the street as part of the remedy, and if the street is paved, especially if with a concrete base, this means considerable expense and time, and damage to the pavement. It would therefore seem that too much care can not be given to securing a service connection that will require a minimum of future attention; and it is believed to be demonstrable that the kind of service that most completely secures this result is the most economical as well as satisfactory, no matter what it costs. The calculation on which such a statement is based includes relative life of the several kinds of services, cost of repairing and replacing, cost of attending to complaints of consumers, value of water lost through leaking services (often unsuspected), etc.

In its simplest form a service consists of a small wrought pipe, tapped into the main and extended to the building served. In years past such crude construction was practiced, and instances of it may yet be found; but no superintendent would think of employing it for new construction. A modern service connection consists of a corporation cock, a flexible connection ("goose-neck") in some cases, a curb cock, a shut-off in the cellar, and a meter, with the several unions, flanges, wiped joints, nipples, plugged T's, etc., that may be used in connection therewith.

The arguments for the corporation cock need not be emphasized, since their use is probably universal. They form a connection of brass at the main that permits repairing or renewing the service pipe without shutting off pressure in the main, and that will not rust out or break off, as so often happened when the pipe was tapped directly into the main. The corporation should have an indefinite life, whatever may be that of the service pipe, and there should be no idea of saving a few cents in its cost at the expense of absolute reliability.

It is found best to screw the corporation into the main far enough to have its end protrude a quarter-inch or so inside the wall of the pipe. This greatly reduces the probability of tubercles closing the opening of the corporation, of rust from the main entering the service (the tapping of the main generally causes a greater or less area of the iron to be exposed to the action of the water), and of suspended matter in the water entering the service. If the corporation does not protrude more than a quarter or half-inch it does not interfere with the operation of pipe-cleaning appliances.

Water works men do not agree as to the desirability of using a gooseneck of lead between the corporation and the wrought service pipe. The advantages claimed for the gooseneck are that it permits temperature changes of length in the service pipe without bringing a strain on the corporation or the joint between it and the service pipe, that it also relieves the corporation and joint from strain due to settlement of the service pipe or disturbing of it by subsequent trenching or other disturbances of the street, that the service pipe can be placed deeper or shallower than the main if desired, that not so much care is necessary in inserting the corporation in the main at exactly the right angle, nor in cutting the service pipe to exactly the right length, and that the corporation can be placed on the top of the main instead of the side, the former position being considered to offer less danger of damage to the corporation. (The writer once saw five side-tapped corporations, broken off at one time by men climbing out of a caving sewer trench that was being dug parallel to the main, the corporations being used as steps. If they had been on top of the pipe this would not have happened.) The objections to their use are the additional cost, the occasional failure of wiped joints (many superintendents now use lead flange joints instead of wiped joints, while others never have had trouble with wiped joints), and the difficulty of removing obstructions from services provided with goosenecks. It may be said also that scores of superintendents report that they have never experienced leaks or failures of joints at corporations, although they do not use goosenecks. Personally, the writer prefers the use of the gooseneck and generally the placing of the corporation in the top of the pipe.

The use of the cock or valve at the curb line is now almost universal. It permits readily turning off the water in case of a failure to pay the water bills, closing or abandonment of the house, fire which results in a breaking of the house plumbing and consequent unobstructed flow through the service, or necessity for re-

pairing that part of the service between the curb and the cellar shut-off, which part appears to be the most vulnerable. Also it permits detecting leaks and waste by use of an audiphone or similar instrument. It is made accessible from the surface by means of a box provided with a cover. Practice with respect to these boxes is not generally satisfactory. They should be set and maintained with their tops about a quarter-inch above the ground; unless they be in the walk itself, when they should be exactly flush with the surface of the walk. If below the surface, water and mud are liable to collect in them. If more than a quarter-inch above the surface they interfere with mowing the grass around them and invite attention from mischievous children. The cover should be so fastened on that it cannot come loose or be removed readily by any but the water works employee. It is common to find a large percentage of the curb box covers loose or entirely missing throughout an entire city, and the boxes filled with dirt. A box in such condition is better than none at all, but it would be better to have a cover that would remain on even if it was some trouble for the water works employee to remove it when necessary, such trouble being slight compared to that required to remove the dirt from a box that had been filled with it because of a loose or missing cover.

Many superintendents find more outside corrosion or rusting of service pipes occurring just inside the cellar wall than at any other point. This is probably due to the "sweating" of the pipe, which causes it to be continuously subjected to moisture and air exposure combined. It is possible also that it may be caused by electrolytic action due to the attachment at this point of a brass shut-off or meter. For this reason it is a good plan to extend the pipe into the cellar at least a foot or 18 inches before attaching any appurtenance, so that if the thread rusts out (this is the most common location of failure) it can be cut off and the pipe rethreaded. Some advocate terminating the wrought service pipe in about three feet of brass pipe where it passes through the cellar wall, but in addition to the cost, if electrolysis is responsible for the corrosion, such corrosion would be transferred from inside the cellar to the junction of the two materials outside, where it would be more difficult to reach it.

Many find it a good plan to terminate the straight run of service pipe inside the cellar with a T plugged in the line of the pipe. Then, in case of a stoppage, by removing the plug a rod or other cleaning tool can be run straight out through the service to the main, or a steam or hot water pipe can be inserted for thawing a frozen service.

Inside the cellar wall there should be a valve or shut-off, so that the house-holder can shut off the water from his plumbing in case of repairs to the same, of leaving the house during an absence of days or weeks, of danger of freezing, etc. It is desirable to have a combined shut-off and waste so that the pipes can be emptied when the water is shut off and thus their freezing prevented. This shut-off is often placed on the floor in a coal bin or dark corner, and is generally provided with a handle that requires a wrench to turn it. It should be readily accessible at all times and be easily operated by a woman, so that it can be closed instantly in case of an emergency such as a burst pipe.

Where there is a pressure regulator or meter or both on the service these should be just inside the shut-off, one continuous series of brass unions and nipples connecting up the whole, thus avoiding the alternating of brass and iron that may invite galvanic or electrolytic action.

The selection of material for the service pipe itself will be considered next week.

Municipal Journal

Published weekly at
243 West 39th Street

by

Municipal Journal and Engineer, Inc.

S. W. HUME, President

J. T. MORRIS, Treas. and Mgr. A. PRESCOTT FOLWELL, Sec'y

A. PRESCOTT FOLWELL, Editor

SIMON BARR, Assistant Editor

CHARLES CARROLL BROWN, Western Editorial Representative

Telephone, 9591 Bryant, New York

Western Office, Monadnock Block, Chicago

Contributed Articles and Reports.

Contributions suitable for this paper, either in the form of special articles or as letters discussing municipal matters, are invited and paid for.

City officials and civic organizations are particularly requested to send to Municipal Journal regularly their annual and special reports.

Information Bureau.

Municipal Journal's Information Bureau, developed by twenty-one years' research and practical experience in its special field, is at the command of our subscribers at all times and without charge.

ADAPTING EDUCATION TO WAR CONDITIONS.

One of the oldest colleges in conservative New England, which sheltered in one of its existing dormitories the soldiers of Lafayette during the revolution 140 years ago, has shown itself aggressively youthful and more progressive in adapting itself to novel conditions than most of the younger institutions. Faced with a diminution of attendance and income because of the enlisting and drafting of many of their students, most colleges are reducing teaching forces and preparing to run along the established lines but on a reduced scale. Brown University, however, has decided to endeavor to adopt new methods to meet the new conditions.

For instance, with the draft age at 21 and the average graduating age 22, the senior year would be lost or postponed to the majority of students. Solution—run the college twelve months a year and give a four-year course in two years and eight months, thus lowering the average graduating age by more than a year. With students drafted next spring at 18 and given at government expense two years of college education after the war, one year's college work can be completed this winter before being called in the draft, and the remaining three years' work can be completed in two years after the war. The plan is to have three terms a year, each the length of the present half-year term, the eight terms thus being completed in less than three years.

Other changes are planned, also, tending to increased efficiency in the work of the college and increased usefulness of the graduate to the nation. For example, all the university's courses will be pointed toward the reconstruction period which will follow the war—a period fraught with even more difficulty and danger than the present, and one that will require the broadest outlook and keenest insight into social and economic problems, both domestic and international.

In the future, both immediate and distant, men trained in science and economics will be needed to a greater degree than ever before, and the providing of such men should not be intermitted if it can possibly be avoided. Brown seems to have taken a step that should go far toward solving the problem of maintaining the supply of experts in civic government and of engineers.

CANTONMENT SEWAGE TREATMENT.

Among the new problems that the war has forced upon engineers for solution, one that is not yet satisfactorily solved is the treatment of the sewage of the cantonments, the novelty lying in the condition of the sewage to be treated. The War Department announces that an average of about \$40,000 for each cantonment will be spent in enlarging the plants originally provided. But aside from enlargements, some modifications of plants or sewerage systems or both would seem to be necessary.

The standard plans for the cantonments provide for septic tanks, in some cases supplemented by further treatment. But it is found that the septic tanks fail to effect septicization, in some of the camps, at least. In one plant visited by the writer, sludge that had been accumulating for eight months failed to show any indication whatever of septic action. Strictly speaking, there appeared to be almost no sludge except sand and other mineral matter, most of the organic matter remaining at the surface. For this there appeared to be two chief reasons—the sewage from 25,000 to 45,000 men reaches the plants after a flow of little more than a mile from its furthest source, and with practically no comminution of fecal matter; and the amount of grease and soap is enormous, analysis in one case showing it to be more than fifty per cent of the suspended organic matter.

It is the general experience that little septic action takes place in scum, and if the floating matter is not made to settle, such action probably will not be obtained. It is probable also that the large amount of grease covers the particles of fecal matter and interferes with such action as might otherwise take place, besides increasing the flotation of the particles. If sedimentation and septic action are to take place, therefore, it would seem to be necessary to break up the suspended matter by mechanical agitation and to remove or exclude the grease. If, as is suggested, the grease attaches itself as a coating to the other matters, then removal will be difficult; and in any case exclusion by means of grease traps at kitchens and elsewhere would seem to be preferable for several reasons, not the least of which is the value of the grease that can thus be recovered before it is mixed with the other sewage. At Camp Meade \$80,000 has been appropriated for erecting a grease rendering plant, and a large grease trap has been built at the outlet of the sewer system where it is expected to skim off the grease from the sewage. But if all the organic matter floats, it is difficult to see how the grease alone can be removed, and it would seem to be necessary to treat all the suspended sewage matter together. We are forced to the conclusion that grease traps at the buildings where the grease originates will prove the only solution; although it is possible that violent mechanical agitation of the sewage before it enters the large grease trap may so break up the floating matters and separate them from the grease that they will settle and leave little but grease on the surface.

But why not change the plan altogether? Much credit is taken by the management of the cantonments for the utilization of the camp wastes, and it appears to deserve great praise for its handling of this matter. Why not utilize the sewage for its fertilizing value? For years it has been said that one prohibitive difficulty in direct utilization of sewage matter was the enormous dilution of such matter. If, however, most of the matter reaches the plant unmixed with the water but floating on it, and automatically collects in the tanks in almost its original form, this condition would seem to offer the best possible opportunity for recovering the valuable matter in

the sewage for fertilizing purposes at small expense. Moreover, this sewage contains no trade wastes or other matters that would diminish its value as a fertilizer. If there are any conditions under which domestic sewage can be utilized economically, it would seem possible to find or create them at the cantonments at minimum expense.

STREET AND SEWER WORK IN CINCINNATI.

Horses and mules are used in large numbers by the Department of Streets, Sewers and Catch Basin Cleaning of Cincinnati, there being on hand on January first of this year 196 horses and 55 mules, an increase of 15 horses and a decrease of 15 mules from the totals of the year previous. In his report for the year, Fred Maag, superintendent of the department, gives itemized costs of feeding these animals by months. These show that during the year this amount of live stock consumed 1,424,495 pounds of hay, or 16 pounds per day per horse; 1,010,288 pounds of oats, or 11.8 pounds per horse per day; 324,660 pounds of nutritia, or 3 pounds per horse per day, and 1900 pounds of oil meal. The total cost of feed used by the department was \$43,225.87, an average of 49c per horse-day. The cost of feed per horse-day varied from 38.5c in January to 58.5c in December, the cost rising more or less uniformly throughout the year. The other stable expenses per horse-day varied from 27.7c in June to 54.3c in September. The total stable cost per horse-day varied from 69.8c in January to \$1.073 in September; while the total stable expense per horse per day in actual service varied from \$1.034 per day in March to \$1.686 in September, an average for the year of \$1.416 per applied horse-day. Taking the average for the year and for all stables, and excluding Sundays, each work horse was idle from 4.0 to 7.8 days per month, averaging about 5.4 days per month.

Mr. Maag gives costs of the various operations carried on by the department, itemized by months and by yearly averages. Owing to the considerable number of figures involved, only the yearly averages will be given in this synopsis of his report. The unit employed by him is 16,000 square feet or 400 lineal feet of street, either of which is called a "square."

Street flushing amounted to 90,766 squares, the unit cost for which was 12.1c for labor, or 26.8c including overhead.

Machine brooming was done only during July, August and October and to the extent of 319 unit squares. The cost of this for labor was 9.5c per square, or 24.7c including overhead.

Of street sweepings 99,433 cubic yards were removed at a cost of 28.6c for labor, or 52.6c including overhead.

White wings cleaned 117,554 square yards at a unit cost for labor of 30.1c, or 34.7c including overhead.

The amount of gutter cleaning was 27,488 squares, the unit cost being 14.4c for labor or 16.2c including overhead.

The department removed 261,817 cubic yards of ashes at a unit cost of 29.9c for labor, or 51.5c including overhead.

Snow was removed from 49,523 unit squares at a unit cost of 22.2c for labor, or 35.5c including overhead.

The broom gang cleaned 86,231 squares at a unit cost of 23.8c for labor, or 28.2c including overhead.

During the year 2,025 catch basins, 40,985 inlets and 2,765 sewers were cleaned, 16,279 cubic yards being removed from them. In this work there were employed 4,471 horse-days and labor costing \$14,595; the total cost being \$24,894.

Comparing the amount of work done during 1917 with that done during 1916 shows that it was considerably

less last year in almost every item, there being, however, a slight increase in the amount of snow and ice removal and in the number of inlets and sewers cleaned. In spite of increase in wages, the total expenditure for labor in 1917 was \$218,805 as compared to \$219,177 in 1916. Overhead cost, however, increased from \$115,573 in 1916 to \$123,980 in 1917. The unit cost for labor was increased slightly in most instances, the greatest increase being 6 per cent in ash removal, street sweeping showing an increase of 5.9 per cent and gutter cleaning the same. In several items, however, there was a decrease in unit cost in spite of increased wages, snow removal showing a decrease of 10.8 per cent, cleaning street crossings 20.9 per cent, the broom gang, 2.1 per cent, and the white wings and alley cleaning each showing a decrease of 1.3 per cent.

STREET WORK IN NEWPORT.

From the annual report for the year 1917 of John F. Sullivan, street commissioner of Newport, Rhode Island, we take the following interesting items:

The watering of streets commenced on April 23rd and continued to November 16th, 39 miles of streets being watered at least twice each day. The total cost averaged \$277.32 per mile. Both fresh and salt water were used, 16,171,069 gallons of the former and 1,274,250 gallons of the latter during the entire season. The fresh water was used in sprinkling amounting to 137,518,765 square yards, and salt water for 17,242,455. This gives an average of .118 gallon per square yard of fresh water and .074 gallon of salt water.

As for a number of years past, the Department used "Dustoline" as a dust layer on a number of streets, treating 26½ miles of roadbed of an average width of 20 feet, at an average cost of \$180.84 per mile, six tank cars containing 38,418 gallons being used for this purpose. Mr. Sullivan reports that "this excellent dust layer has been used for many years and has always given entire satisfaction."

During the year the city obtained possession of an excellent quarry site and installed there a stone crushing plant. The buildings were constructed at a cost of \$3,350, with \$200 additional for a scale house. A fifteen-ton platform scale was supplied by the Providence Scale and Supply Company for \$340, the scale pit costing \$120.30. An elevator was purchased from the Good Roads Company for \$1,168 and installed under the direction of the superintendent of that company.

It was found to be quite an undertaking to open up the new quarry, removing the surplus earth and acquiring a good face to the rock so as to get out the stone in sufficient quantities to supply the crusher and keep it steadily at work. Fortunately considerable material was needed as filling in a street improvement which was being carried on at that time, and 1,733 loads of dirt obtained in stripping the quarry was used in this grading, for which the Department received \$782.25. The total cost of the plant was \$6,345 and that of the land \$2,500.

An asphalt heating plant was installed at the city's wharf under contract with the Dyar Supply Company for \$5,250. This plant consists of two asphalt kettles, each of 1,000 gallons capacity, installed upon a substantial elevated platform. This plant greatly facilitates the asphalt macadam construction work done by the department.

This was the second season that the department had used Tarvia Cold Patch for street repairing, and a five-ton roller and a few men were employed almost the entire season on this class of work. The department finds that both water-bound macadam and asphalt road beds can be repaired to the best advantage with this material.

The WEEK'S NEWS

Difficulties on New York State Highway Work—U. S. and Cities Fight Venereal Diseases—Meter Rates Allowed
 San Francisco Water Company—Denver Votes \$13,970,000 for Water Works Ownership—Saving by
 Lightless Nights—Mouth-of-Mine Power Plant—Government Attitude on Street Railways—
 Detroit Riots Against Six-Cent Fares—Chicago's New Street Railway Plan—
 Cleveland Pays Five-Cent Fares—Government's Housing Projects.

ROADS AND PAVEMENTS

War Department Pays Share for Camp Road.

Washington, D. C.—The expenditure of \$95,000, as its share in the cost of building a road from Camp Gordon, Ga., to the Norcross Rifle Range, has been authorized by the War Department. The total cost of the road is estimated at \$190,000. The present road between the two points runs through clay, and it is frequently impossible to reach the range with heavy trucks. As this road will be used chiefly by the military authorities, the latter will bear the greatest part of the expense. The state of Georgia will give \$65,000, while De Kalb and Gwinnett counties, through which the road runs, will each contribute \$15,000.

Court Sets Aside Acceptance of Badly-Built Road.

Portland, Ind.—Theodore Shockney, judge of the Randolph county circuit court at Winchester, has made a decision in a road case that is not only expected to be far-reaching in its effects, but to set a precedent that will be beneficial to tax payers in every part of Indiana. A contract was let to build what is called the A. L. Jaqua road in Wayne township, Jay county. After the highway had been accepted by the county commissioners, the people, who had to pay for the road, objected on the ground that it was not built according to the plans and specifications. Gilbert H. Hendren, of Indianapolis, chief examiner of the state board of accounts, sent A. L. Donaldson, the board's civil engineer, whose investigation of road bore out the contention of the taxpayers. In the suit that was filed a change of venue was taken to Judge Shockney. The decision holds that the taxpayer plaintiff's allegations of non-fulfilment of specifications to be true; that the order of acceptance of the work by the county commissioners be set aside, and that the plaintiff may recover costs. The taxpayer complained, among other things, that a cement culvert was badly built and not according to specifications; that the road was not rolled at all, as called for; that the curbs were made of dirty gravel, mixed with soil; that a large number of the bricks used in the construction of the road are culls and not properly laid; that grades were badly laid out; an expansion joint is improperly set; sand instead of gravel is used in concrete for the base in parts of the road; curbs are badly set and broken; that the road was not completed on time; that competent men were not used at all times in the work of setting forms, finishing curb, and other parts of the work; resawed blocks, which were not creosoted, were used on the bridge; that the concrete base is not properly smoothed or of the required thickness and uniformity.

Commission Restrained from Reletting Abandoned Work.

Albany, N. Y.—On the day of opening bids, the National Surety Company served upon the state commissioner of highways injunction orders restraining him from awarding contracts for the completion of several highways located in Nassau, Ontario, Monroe and Erie counties. The contracts were originally awarded for this work in 1916 and progressed in a very dilatory and unsatisfactory manner. The contractors in each case finally abandoned the job, leaving the highway more or less torn up and in a condition dangerous for public travel. The state department of highways proceeded in accordance with the contract and the law, after the contractor and surety had both neglected and refused to take any steps toward com-

pleting the job, and advertised for bids to complete the work. The contractor and the surety company are jointly and severally liable for any excess cost over the contract price, which may result by reason of the contractor's abandonment of the job. The present condition of the roads covered by these contracts is such as requires immediate attention, but the temporary injunction, if made permanent, will probably prevent the commissioner from awarding any contracts for the work of completing the roads and putting them in passable condition for traffic. No contracts for new construction work were awarded for the highway department in 1917, all of its efforts being directed toward the usual maintenance and repair of improved roads and the completion of construction contracts in force. A very considerable number of construction contracts remained in force for 1918, and the department has done its utmost in securing the completion only of the torn up portions of highways covered by such contracts in order that the highway system of the states may be open for traffic and for transportation purposes, which by reason of the shortage of railroad facilities, is at this time most highly necessary, not only for ordinary purposes, but also for transportation of war supplies. Many of the contractors are proceeding with their work. Some of them have abandoned their contracts, leaving the roads in an impassable condition. The National Surety Company in its affidavits upon which the temporary injunction was obtained, states that if contracts for the completion of the roads are awarded they will sustain a heavy loss.

Suspend 8-Hour Law on Capital Sidewalk Construction.

Washington, D. C.—President Wilson has issued an executive order suspending the eight-hour limit on government work in the District until December 1. The work is declared an emergency. The District commissioners have entered into contract with the Warren F. Brenizer Co., of this city, for the construction of sidewalks around government buildings and elsewhere in the District.

SEWERAGE AND SANITATION

Utilities Commission Allows Higher Sewerage Rates.

Burlington, N. J.—Although dismissing applications filed respectively by Robert Turner and the city of Burlington against the Burlington Sewerage Company and the borough of Collingswood against the Collingswood Sewerage Company, the Public Utility Commission has practically granted the relief asked for in each case by deciding that increased rates by the Burlington company shall become effective from February 15 last, and those by the Collingswood company from April 24 last. The Burlington company claimed the right to make the increased rates effective from August 1, 1914, and the Collingswood company made a similar claim from September 1, 1914, these being the dates when the original application for permission to increase rates were filed with the board. The petitioners in the two cases asked the commission to enjoin the companies from making the increase retroactive, but the board decided it had no authority to take such action, although possessing power to designate the effective dates of the rate increases. The situation was compli-

cated by the fact that in disposing of the cases originally the board refused to permit the increases requested on the ground that its power was limited by the franchise agreements prescribing maximum rates to be charged by the two companies. Following the decision of the Supreme Court reversing this judgment, new applications were filed some months ago, these being followed by orders permitting increases of rates. One of the interesting questions raised in the latest proceedings involved the effect of stipulations made between the municipalities involved and the sewerage companies as to the effective date of any increases which might be ultimately granted. The board found in fact that the municipalities and some of the consumers had agreed that if the litigation in the courts should be decided in favor of the companies, the rates should become effective as of August 1 and September 1, 1914. Guided by judicial interpretations of the law, and particularly the opinion in the Collingswood sewerage case, the board held that stipulations between a public utility and a municipality as to the effective date of increased rates do not bind the customers of the utility, and that stipulations between a utility and a municipality and some of the customers do not bind any or all of the customers. The Supreme Court held that, inasmuch as consumers were not made parties to contracts entered into by municipalities, they could not be bound by such contracts. The board supplemented this ruling with the declaration that it would be manifestly contrary to the theory of public utility regulation to hold that stipulations were binding upon customers entering into agreements, but were void as to other customers. Such a ruling, the board said, would bring about a discrimination directly contrary to the spirit of the public utility law.

City Authorities Co-operate in Venereal Disease Fight.

Washington, D. C.—According to the Surgeon General, "measures taken by the American military authorities against the spread of venereal diseases among the soldiers of the Expeditionary Forces have resulted in the lowest annual rate per 1,000 ever recorded for American troops. The recent report from overseas June 13 gives the annual rate for all overseas troops at 47.8 per 1,000. This means that at the present ratio less than 1 man per 1,000 contracts venereal disease every week. The best figure for the Regular Army in the United States in peace time was in 1916, when the annual rate per 1,000 was 91.23. During a period of 32 weeks the overseas forces had the lowest record, with the exception of two weeks, of all American armies. The record of the Expeditionary Forces has been well below the 75-per-1,000 figure as an annual rate. Even this is actually less than 2 men reported per 1,000 each week.

Within the United States the record is still better, the comparable figures showing an estimated annual rate of less than 21 per 1,000 as against 91.23 per 1,000 prior to the present war. The new policy of the War Department which was adopted with the application of the draft—that is, accepting men infected with venereal disease for Army service—has made the prevalence of disease among the troops in the United States appear much higher. Thus the figures for a 37-week period for the three armies in the United States are higher than the figures for the Expeditionary Forces. The averages from September, 1917, to May, 1918, inclusive, were as follows: National Guard, 76; Regular Army, 98; National Army, 128.

The highest rate of venereal cases reported from any of the armies during one month was from the National Army in September, 1917, when the annual rate was 312 per 1,000. The lowest rate of the troops in this country is credited to the National Guard, whose rate of 50 per 1,000 men was recorded during April, 1918. The highest figure for the National Guard is 130. This was recorded in September, 1917. The highest Regular Army figure was 193 during May, 1918, and the lowest 69 during October, 1917. All figures given are expressed as annual rate per 1,000. The mean rate for all troops from September 21 to May 31 is 103.8.

Of the total number of these cases among the troops in this country five-sixths were contracted before induction into the military service. Of the newly inducted men 7 out of every 100 have the disease when brought to the camps.

Venereal disease is the greatest single cause of disability in the Medical Department. The percentage of venereal disease was higher during the period from September 21, 1917, to May 31, 1918, than any single communicable disease, such as measles, pneumonia, scarlet fever. More men were taken from active service for this cause than because of injuries.

Of the number that came into the Army suffering from this disease and of the number who contract it while in the military service only about 1 in 100 have to be discharged as unfit for military service.

Special care is taken to prevent the spread of the dis-

ease in the camps. Acute or active cases are segregated and every precaution is taken to protect soldiers who expose themselves to disease. Regular stations for inspection and treatment are maintained in every camp. Zones have been established surrounding every cantonment from which prostitutes are excluded, and wherever camps are situated near towns and cities the segregated districts have been wiped out, the municipal officers co-operating with the military authorities in the suppression of resorts and the punishment of offenders. Before the present war the principal emphasis in the prevention of venereal disease in the Army was placed in the instruction of the soldier against exposure and in the administration of the early, or prophylactic, treatment to those who had exposed themselves in spite of instructions. The Army had little success in persuading the civilian communities near Army posts to protect soldiers against exploitation through commercialized prostitution and the sale of liquor. Conditions near Army camps were prone to be made worse than elsewhere. In the present war everyone appears to be interested in the welfare of the soldiers, and most communities respond to any definite request of the Army for correction of conditions which would tend to demoralize or disable the fighting men. Within the camps the soldier is instructed in the conduct expected of him and its bearing on his avoidance of exposure to venereal disease. This is done through company commander's talks, special lectures, moving pictures, stereomograph exhibits, and pamphlets. The Army film, "Fit to Fight," is proving effective.

As an additional safeguard the men are told that if in the event that they exposed themselves and do not take the treatment provided by the physicians they will be court-martialed. At least twice a month every soldier is inspected for venereal disease. If found infected, he is put under treatment, so that he can be rendered non-infectious and returned to duty as soon as possible. As a protection to the civilian community he is restrained to the camp. He loses his pay while disabled, and he is also tried by court-martial and punished if he violates the order requiring the taking of treatment. Many times the soldier who has venereal disease may be questioned as to the source of his infection, and the information found to be available for planning co-operation with civilian authorities in discovering venereal disease cases which need isolation and treatment. At the present time 27 commissioned officers of the Sanitary Corps of the Army are engaged in the Law Enforcement Division of the War Department Commission on Training Camp Activities in combating venereal diseases by means of stimulating the enforcement of municipal, state and Federal laws having to do with the suppression of prostitution and of liquor selling to soldiers. In this way more than 80 red-light districts have been abolished, including 34 outside of the prescribed 5-mile zones in camp communities, and at distances varying from 7 to 100 miles. More than 200 cities and towns have co-operated in the abolishment of districts, the more drastic enforcement of present laws, and the enactment of new legislation, especially that designed to enable the authorities to co-operate effectively with the surgeons general of the army and navy in protecting soldiers and sailors against venereal disease. The Army, Navy, and Public Health Service are receiving the co-operation of many agencies in venereal disease control among civilians. The Red Cross is maintaining 24 venereal disease clinics in extra cantonment zones, and the Public Health Service is furnishing the medical personnel. States and cities are organizing venereal disease control works, often under a separate bureau with special funds.

One in Community Refuses Vaccination—Gets Typhoid.

Salemberg, N. C.—The state board of health in its anti-typhoid campaign is making good use of the story of the fight against typhoid in the model health community of Salemberg, Sampson county. Every individual in the community except one was given the anti-typhoid vaccine. This summer there has been just one case of typhoid fever in the community and one death, and the victim was the person, a negro, who refused to be vaccinated.

WATER SUPPLY

Company Allowed to Collect Meter Rates.

San Francisco, Cal.—The Spring Valley company has been granted permission by the state railroad commission to collect meter rates on all metered services. This relieves the unusual situation of a water company having meters in service without being allowed to base charges on meter readings. The commission has stated its belief that metering is the only means of conserving the present supply, and is to issue an order covering rates as soon as the company engineers can confer with the commission and agree thereon. Allen Hazen stated in the course of the hearing before the commission that the company is now selling more water than its sources are capable of producing. During the past year the rainfall has been only 41 per cent of normal, and Mr. Hazen pointed out that should a third dry year follow the water reserves of the company would be exhausted. At the present rate of consumption, he said, the company has only a 330-day supply in storage. The domestic consumption registered by meters is approximately 110,000,000 gal. per day, but as flat rates only are collected Mr. Hazen estimates that approximately 2,000,000 gallons per day are wasted. The company's rate schedule, as now accepted by the city, was worked out with the intention of bringing the company the same revenue as is produced by the present flat rates. The proposed rates are in the form adopted by the New England Water Works Association, graded as follows:

Kind of Service.	Rate Per 100 Cu. Ft.	Quantity Per Month, Cu. Ft.
Domestic	24	Up to 33,000
Intermediate	20	3,300 to 33,000
Manufacturing	16	Over 33,000

The meter charge, in addition to the foregoing, would range from 75c. per month upward, varying with the size of the meter. It is believed that under the proposed rates 10 per cent of the consumers, designated as water wasters, would be hit hard, 40 per cent would be affected by a slight increase, and the other 50 per cent would get lower rates. In the event that these rates produce more revenue than the flat rates, the excess is to be disposed of by order of the railroad commission. Selling water by meter measurement in San Francisco was temporarily suspended early in 1917 by order of the State Railroad Commission, on the ground that the rates then being collected had no legal status because they had been fixed by the city authorities after jurisdiction had passed to the commission.

Denver Votes for Municipal Ownership.

Denver, Colo.—By a vote of 6,248 to 1,800, or a majority of 4,448, the taxpayers approved a bond issue of \$13,970,000 for the purchase of the property of the Denver Union Water Company by the city. At the same time they declared themselves in favor of management of the plant by a board of managers by a vote of 7,286 against 2,337, or a majority of 4,941. Had the latter proposition been disapproved, management would have passed into the hands of J. A. Burnett, manager of improvements and parks. The water commissioners were selected by the various civic and commercial bodies and interested citizens and are: John C. Skinner (until June, 1919), Benjamin A. Sweet and Frank L. Woodward (until June, 1921), and Charles H. Reynolds and Finlay F. MacFarland (until June, 1922). The total vote on the question of bonds was 8,048, slightly larger than was expected, and at the same time less than that of Sept. 6, 1910, when the question of constructing a municipal water plant was put up to the citizens of Denver.

The figure of \$13,970,000 in bonds was determined upon by W. J. Chinn, special master, in a report where he placed the value of the plant at \$13,415,899, plus \$1,084,101 for improvement for the four years ending May 1, 1918. In addition \$100,000 is figured as the expense of the company before it is turned over to the city for operation. From the estimate of the improvements from May 1, 1914, to May 1, 1918, is subtracted \$630,000 for depreciation.

The history of litigation between the city and the water company dates from 1895, twenty-five years after the first water company was organized in Denver. Prior to that time the Denver City Water Company had split into two factions, one of which organized the Citizens' Water Company. On Oct. 24, 1894, the Denver Union Water Company was organized,

consolidating the two rival factions. In 1895 the first suit between the city and the company arose over the efforts to regulate the water rates. The case was taken to the United States Circuit Court, where the city lost. Again in 1897 the city sued, complaining as to the pressure, supply and purity of the water furnished, and again the city lost.

In 1900 the city voted \$14,700,000 in bonds for the erection of a municipal plant. The water company had the issue of these bonds enjoined. In 1907 the city brought suit questioning the price of plants, rates, pressure and quality, which was again lost to the municipality.

In 1910 the water company made application for another twenty-year franchise, which was refused by the voters of Denver. Some \$8,000,000 in bonds was at this time issued for the erection of a municipal plant, but upon application of the water company the courts again enjoined the city from erecting the plant. An appeal was made in 1911, and the city again lost.

From 1911 to the present year the litigation has been chiefly concerned with the question of acquiring the plant, and it was finally ended on March 4, last, when the United States Supreme Court upheld the lower courts in accepting the report of Special Master Chinn in placing the valuation of the plant at \$13,415,899.

A feature of the campaign for municipalization conducted by the city officials was the help of R. B. Howell, manager of the Omaha, Neb., waterworks. The city attorney's reasons why the water plant should be purchased were as follows:

1. The people of the city and county of Denver have by previous votes decided upon municipal ownership of the whole plant.
2. If the plant is not acquired by the city at the present time, the people will have to pay increased water rates.
3. If the plant is acquired at the present time, water rates will not be increased, but may be decreased.
4. The option price was fixed before the present high prices resulting from the war.
5. It will be impossible to ever acquire this plant again, or to build a new plant, for the present price.
6. No part of the plant has to be paid for within ten years, and when paid for can be paid from the revenue of the plant.
7. Not to buy the plant would not be keeping progress with other cities of the size of Denver, but would be a backward step and a serious business mistake, and would be missing an opportunity which may never be presented again.
8. Because harmony would be substituted for unrest and discord and prosperity in the community would be promoted.

The bonds are to be dated November 1, 1918, and are to bear interest at the rate of 4½ per cent per annum, to mature thirty years from their date, but subject to call on and after ten years from their dates. They were approved by Secretary McAdoo.

Rates for City Increased, Consumers Decreased.

Berkeley, Cal.—The individual water consumers of Berkeley will benefit to the extent of many thousands of dollars in water charges saved through the decision of the state railroad commission, affecting the rates of the East Bay Water company. But the city of Berkeley, as a municipality, finds that the decision has greatly increased its water charges, and city officials are wondering where the city will get the money to take care of the raise. According to officials, Berkeley's water charges for the year will be increased from approximately \$8,000 to \$43,000, an increase of \$35,000, which has not been provided for in the budget. Attorney B. D. Marx Greene, who represented the city of Berkeley in the litigation, said: "In certain phases, this decision is unquestionably one of the most important ever rendered by the commission, especially as it will have great bearing upon the pending Spring Valley litigation. After exhaustive testimony adduced both by local witnesses, and by the most eminent eastern engineers, the commission has decided that the retention of water shed lands is unnecessary to maintain the sanitary quality of the water furnished to the inhabitants of the East Bay region. Consequently, the opinion orders the East Bay company to make arrangements to dispose of its enormous holdings of land, except for a strip of 1,500 feet bordering upon its reservoirs and large streams. This means that at least \$4,000,000 worth of land will be released from the rate base upon which the company is allowed to earn interest. The company is ordered, within 90 days, to furnish to the commission plans for divesting itself of these lands, and for the installation of modern filter plants. In order that the financial status of the company shall not be rudely interrupted, the commission does not demand that these lands be immediately disposed of, and allows the company during the interim to receive interest upon the money therein invested. The rates heretofore paid by the consumers of the city of Berkeley for water were 35 cents per thousand gallons, which is equivalent

to 26.2 cents per 100 cubic feet, with a minimum of \$1.50 per month. The new rate is \$1 minimum and a charge of 25 cents per 100 cubic feet for all water used under the minimum, and for all water used over the minimum 20 cents per 100 cubic feet. This is a reduction to the property owner of approximately 23 per cent. This rate, it should be noted, includes a return to the company for extra costs imposed by the present war emergency, such as fuel, labor and materials, and also interest upon the water shed lands, and the commission says in its opinion that when these lands are disposed of and conditions become normal, the rates will be subject to adjustment. The commission, however, holds that the various cities of the East Bay district have not paid the company adequate compensation for fire protection service. It says that the necessity of providing for fire protection cannot fairly be charged against regular customers, and therefore all charges for pipe, in excess of pipes sufficient in size to give adequate domestic service should be borne by the city at large. The commission calls attention to eastern cities where this charge for fire service varies from 25 per cent to 50 per cent, or 75 per cent on the total charges of the company. In this instance, the commission, however, has only assessed the cities for this service 10 per cent of the total charge. The charge is based upon the number of feet of pipe in each city of four inches in diameter, or in excess thereof. In addition, a charge of eight to ten dollars is made for fire hydrants. In this way, it is an incentive to the company to put in pipe large enough for fire protection purposes, for it will be assured of proper compensation. During the past fiscal year, the city of Berkeley paid to the company approximately \$8,000 for fire protection purposes. Under the new rates, the city will have to pay \$43,000. This sum of \$43,000, which must be provided for out of the general tax levy of the city, will be far less to each property owner upon his tax bills than the amount which he will save on his rates from the reduction in his water bill."

STREET LIGHTING AND POWER

Saving Due to Lightless Nights.

Washington, D. C.—According to records kept by representatives of the United States Fuel Administration, the saving of more than 60,000 kilowatt-hours, which is equal to about 100 tons of coal, was made on the first night of the "lightless nights" in the borough of Manhattan, New York City. The saving will be much greater during the winter, when the daylight-saving hour will be restored and darkness begins very much earlier. The figures given indicate a coal economy through "lightless nights" of 40,000 tons a year in the borough of Manhattan alone. From the data now on hand, the Fuel Administration's bureau of conservation estimates a national saving through the operation of the "lightless night" order of more than 1,000,000 tons of coal a year. In one amusement park in Philadelphia using a total of 3,500 kilowatts, the records show a saving of 2,054 kilowatts in one night. In order to effect a complete enforcement of the order, the Philadelphia county fuel administrator has divided the county into 82 districts, each district being in charge of an inspector.

To Build Big Plant at Coal Mine.

Pittsburgh, Pa.—In order to help out the situation in the Pittsburgh district, where the present power supply is inadequate for the government and other work placed there, the West Penn Power Co. has agreed to build a 40,000-kilowatt station at the mouth of the coal mine in the Allegheny Valley and to connect it up, by appropriate transmission system, with the distribution system of the city of Pittsburgh. The estimated cost of the plant and transmission lines is \$5,000,000. The Ordnance Department will advance \$2,000,000 of this amount, and the company, through its bankers, will provide the other \$3,000,000. At a period three years after the end of the war the reduplication cost of the plant is to be determined by three disinterested appraisers, one chosen by the Secretary of War, one by the company, and the third by agreement of the first two, and their finding is to be subject to review and revision by the Secretary of War. The company undertakes to repay to

the government such part of the advance made by the government as represents the excess of the appraised value over the \$3,000,000 originally put up by the company. Propositions received from other companies to extend their power plants or build new ones in the Pittsburgh district if the War Department would advance 40 per cent of the cost and the finance corporation 60 per cent are not looked upon with favor by the government. Lacking more favorable propositions, the government has under consideration the building of its own plants where they are needed in this district.

Charles E. Hughes, Referee, Allows Higher Gas Rate.

New York, N. Y.—After litigation lasting more than two years the Brooklyn Borough Gas Company obtained a decision denying jurisdiction of the Public Service Commission over its rates for gas. The commission then obtained a permanent injunction to restrain the increase to \$1.25. The opinion in the case was written by Charles E. Hughes, as referee, and has the effect of a court decision. It is important because it shows the way for other gas companies to obtain higher prices if they can prove their frequent statement that the maximum statutory rate of 80 cents is confiscatory. When the Legislature fixed the rate at 80 cents the Borough company was excepted from its provisions and was permitted to charge \$1. This was because the territory it serves, Coney Island, Flatbush and Gravesend, was sparsely populated, and because much of the business fell off in the winter months. On a complaint of excessive charging the Public Service Commission inquired into the company's affairs and ordered it to reduce the rate to 95 cents. Then the Legislature amended the 80-cent law so as to include the Borough company within its provisions. Thereupon the company began proceedings on the grounds that the 80-cent rate was confiscatory, and Mr. Hughes was named to make the inquiry in the company's financial affairs, to examine witnesses, and to prepare an opinion. His opinion, filed with County Clerk Schneider, said in effect that the statutory rate was "palpably confiscatory," that the company was entitled to judgment restraining its enforcement, that the Public Service Commission has no power to fix a rate in excess of the statutory maximum, and that, therefore, it was without jurisdiction. Concerning the rate of 75 cents charged to the city the company has no relief, because it would not reduce its total profits, and because it is not required to sell the gas at this rate unless it desires to. The Borough Company is a small one. Its capital stock is \$750,000, and its bonded indebtedness is \$1,000,000. It was organized in 1898, and it has paid no dividend since 1914. Until then it paid 6 per cent. Referee Hughes fixed the value of the company's plant at \$1,670,492.54, and stated that its operating revenues last year were \$445,361.21; its operating expenses, including depreciation, taxes and uncollectable bills, were \$393,351.69.

The local public service commission immediately commenced hearings. The most important witness called was Miss Mary E. Dillon, chief statistician and assistant general manager of the company. Miss Dillon admitted that, while the offices of the company were in Brooklyn, the financial office was in Philadelphia and that all bills save minor ones were paid from that office. She also said there had been no stock dividends during the period of 1898 to 1913, and that since the 95 per cent. rate had been enforced there had been five or six dividends of 3 per cent. There were no dividends paid during the last two years. Her next admission was that the company is now enjoying and has enjoyed for the last eight or nine months an unprecedented increase in business. Formerly the summer income was greatly in excess of the winter income, which is the direct opposite of conditions prevailing in other concerns of a similar nature. She confessed that the company had operated in violation of the Commission's ruling with regard to maintaining an average of twenty-two candle power. She testified that the company had used a half gallon of oil less per thousand feet than was necessary to maintain that standard. Her reason was that the company could not obtain the oil.

William L. Ransom, chief counsel for the Commission,

said it was his opinion that the company had no legal right to use the decision to charge 45 cents more than the 80-cent rate fixed by the Legislature, and 30 cents more than the special rate fixed by the commission. Mr. Ransom said that Mr. Hughes had found that the 95-cent rate has yielded the company nearly $4\frac{1}{2}$ per cent upon the value of its property. "The suggestion of establishing a \$1.25 rate impresses me as an attempt to take advantage of consumers who have been patient with this company's derelictions of last winter and with its continued charging 95 cents when the Legislature has decreed that no more than 80 cents should be charged," said Mr. Ransom. "The valuation figure submitted by the company, based on the 'opinion' of so-called experts, were rejected altogether by Mr. Hughes, and both the commission's figures and its rule of valuation were accepted. The right of the company to capitalize and recoup losses out of its present earnings is rejected. The claim of the company that it is entitled to earn a return on the present value of its property is rejected. The deduction of depreciation in ascertaining value for rate purposes is upheld. The trouble is not what the referee decided, but with what the company has announced that it has decided to do under authority of the referee's decision." Concerning what he thought would be a fair rate for the company to charge, Mr. Ransom said: "Allowing a rate increase for the war period, equivalent to the increased operating costs, would, in my opinion, warrant a charge little, if any, in excess of \$1." He expressed belief that the company would decide to submit to the jurisdiction of the commission "despite the emphasis which the company has placed upon the referee's dictum doubting or denying the commission's power to fix a new rate."

TRAFFIC AND TRANSPORTATION

No Direct Government Relief for Street Railways.

Washington, D. C.—Official announcement has been made that President Wilson does not believe that the federal government has any authority under existing laws to take over or operate electric railways and lighting companies. This was made public with specific reference to the local railway situation at New Orleans, in which the President was asked to interfere because of labor troubles. Acting for the President, Joseph P. Tumulty, secretary to the President, sent the following telegram to Martin Behrmann, mayor of New Orleans: "The President asks me to acknowledge your important telegram of yesterday and to express his opinion that as the existing law is interpreted the federal government has no power to take over electric railways and lighting companies. The conditions under which such companies operate in different parts of the country vary by so wide a margin that no common rule, it would appear, or method of relief could be applied to them, and it is the President's judgment that it is imperatively necessary that local and state authorities should take the action necessary for immediate relief."

Detroiters Refuse to Pay 6 Cents—Increase Abandoned.

Detroit, Mich.—An attempt by the United Railway to put into effect six-cent fares resulted in riotous scenes and the company was forced to give in. A number of people were injured and much damage was done to property of the railway. Cars were overturned and wrecked; car doors and windows were smashed and mob rule generally prevailed. The police appeared to be helpless. The disorder occurred when political candidates, including James A. Couzens, former police commissioner, advised the people to pay only 5 cents and the common council adopted an ordinance fixing the rates of fare on non-franchise lines at 5 cents for a single ride, six tickets for a quarter and workmen's tickets at eight tickets for a quarter. When the ordinance went into effect the city secured an injunction in the Wayne Circuit Court restraining the railway officials from violating the ordinance. The following morning company officials appealed to the local federal court for an injunction to restrain the city from enforcing the ordinance. This injunction was refused by Judge Tuttle. The court declared that the city should

settle the railway question by giving the company a franchise or by buying and operating the lines. The company at once prepared to appeal direct to the United States Supreme Court at Washington. In the meantime the company is accepting 5-cent fares and selling six-for-a-quarter tickets and workmen's tickets. Immediately following the refusal of the federal judge to interfere, F. W. Brooks, president of the company, telegraphed to W. H. Taft and Frank P. Walsh of the national War Labor Board, calling attention to the situation in Detroit. Mr. Brooks declared that the recent wage increase awarded Detroit United Railway motormen and conductors by the War Labor Board would increase the company's expenses by at least \$2,000,000 a year. He pointed out that the common council not only refused to permit a higher fare so that additional revenue to meet increases might be had, but enacted an ordinance reducing the fares, which the Labor Board had emphatically declared too low. Mr. Brooks said that the company was endeavoring to maintain service so that the munition factories would not be crippled, but warned that unless immediate relief were given the company would have to abandon service.

Public Trustees for Chicago Railways.

Chicago, Ill.—The city council has passed the new traction ordinance, with a few minor changes made in the original plan by the committee on local transportation. Service at cost is the basis of settlement. The public trustee plan recommended by special counsel Fisher has been accepted by all parties. It is proposed to form a corporation, "not for pecuniary profit," to be known as the Chicago Traction Company, under which a board of nine public trustees would take over for operation all the properties of the surface and elevated lines. The first board would be selected by the companies subject to the approval of the city council. The members would continue in control until 1927. The method of selecting their successors would be decided by the city council after that date. It is also proposed to secure State legislation for home rule so that the trustees would have all authority now held by the utilities commission. The proposed financial plan provides that all new money and all refunding is to be paid for at actual cost. Of the present capital account of the combined companies 60 per cent would be covered by bonds at 5 per cent until refunded. The remaining 40 per cent would be in the form of preferred stock with a guaranteed return of 7 per cent during the life of the ordinance and an extra allowance of 1 per cent during the average life of the existing grants, or until July 1, 1932. This would give an average return of 6.2 per cent up to 1932 and 5.8 per cent thereafter on all securities or an average of 5.96 per cent for the next thirty years. The companies had previously insisted on a return of 6.35 per cent, and the original offer under the trustee plan was 5.6 per cent. The companies were conceded another point by adding to the total valuation an item of \$542,104 which is for real estate owned by the elevated lines but not used for railway purposes. This makes the total elevated valuation about \$71,000,000, and the capital account of all companies as of June 30, 1916, about \$218,418,000. Another change in the ordinance is the elimination of the thirty-year grant. Instead, the arrangement proposed was for an indeterminate franchise with the right of the city to purchase and take over all the property at any time by paying the capital amount. The most important change made in the ordinance by council was the provision that all transfers be issued without extra charge. All previous discussion of the franchise had contemplated a charge of 2 cents for a transfer between rapid transit and surface lines. The aldermen contended that the people would refuse to indorse the measure on this account although they now pay 10 cents for riding on both levels. The traction officials consented to the change because there is a safeguard in the provision that rates for fares and transfers may be altered to meet the cost of service, including a guaranteed return on the investment. The pending ordinance was indorsed by representatives of the trainmen's union. The principal objec-

tions were from aldermen who did not want the companies to have the right of nominating members for the first board of trustees. The high standing of the men who have been suggested has, however, silenced much criticism. The following were the company's selections, which are subject to approval by the city council:

E. D. Hulbert, president of the Merchants Loan & Trust Company; Harrison B. Riley, president of the Chicago Title & Trust Company; George G. Tunnell, assistant to the president of the Atchison, Topeka & Santa Fe Railroad and trustee of the Chicago bureau of public efficiency; John F. Smulski, president of the Northwestern Trust & Savings Bank; Joseph E. Otis, vice-president and acting president of the Central Trust Company of Illinois; John W. O'Leary, president of the Arthur J. O'Leary & Son Company; Henry A. Blair, chairman of the board of operation of the Chicago Surface Lines and president of the Chicago Railways; Leonard A. Busby, president of the Chicago Surface Lines and president of the Chicago Railways; Britton I. Budd, president of the Chicago Elevated Railways.

Of the nine men proposed, the present directorates of the companies include Messrs. Busby, Blair, Budd and Riley. The trustees under the new ordinance must have no financial interest in the companies and will be entitled to annual salaries of \$5,000 each.

Five Cent Fare in Cleveland.

Cleveland, O.—The city has now a straight 5-cent fare, 1-cent charge for transfers without rebate. The ordinance increasing the rate of fare from 4 cents, or seven tickets for a quarter, with 1 cent for a transfer, was passed at a special session of the city council called by mayor Harry L. Davis immediately after the receipt of information that the conductors and motormen had been granted a substantial increase in wages by the Federal War Labor Board. The new ordinance fixes five fare schedules. Unlike the Tayler plan, the first is the highest. For the present, however, it was considered sufficient to put the second one in force. The first calls for a maximum cash fare of 6 cents, 1 cent for a transfer and no rebate. As a matter of fact all five schedules provide for this transfer charge without rebate. The schedules are as follows:

1. Six cents cash fare, nine tickets for 50 cents.
2. Five cents cash fare, five tickets for a quarter.
3. Five cents cash fare, eleven tickets for 50 cents.
4. Five cents cash fare, six tickets for a quarter.
5. Four cents cash fare, five tickets for 20 cents.

This ordinance also provides for an increase from 16 cents per car-mile to 19½ cents per car-mile in the operating allowance. The increase will date from May 1, the date when the advance in wages takes effect. The city council urged that all back pay due the men under the increase be paid up by Aug. 15, but the company doubts its ability to complete the payment of the accumulated wages before Oct. 1 without borrowing money for that purpose. The ordinance dates from Aug. 4 and will be in effect until six months after the close of the war, when the schedules of the Tayler ordinance again become operative. It is estimated that the award will result in an increase of between \$1,250,000 and \$1,500,000 a year in wages. As the old wage scale meant the payment of about \$2,500,000 a year, wage requirements will be increased to almost \$4,000,000. Local fares in Lakewood and Cleveland Heights will remain as they are, but no transfer will be issued. Fares for those places for passengers going in or out of the city will be 5 cents, the same as within the city limits of Cleveland.

Court Upholds Commission's Rate Power.

Indianapolis, Ind.—The supreme court has handed down a decision in favor of the contention of the Indianapolis Traction and Terminal Company that the public service commission, acting under Sec. 122 of the public utility commission act, has authority to hear the rate increase petition of the company purely on the ground that an unusual emergency exists. The supreme court instructed the Marion county circuit court, from which the case was appealed last February, to overrule a demurrer which that court had upheld, and set out that a common writ of mandamus will issue against the public service commission to compel it to take official jurisdiction of the company's appeal for a straight 5-cent fare. The Indianapolis Traction &

Terminal Company last November filed with the commission a petition asking for authority to abolish the six-for-a-quarter and twenty-five-for-a-dollar tickets and charge a straight 5-cent fare, retaining all the present transfer privileges. The petition set out that because of the unprecedented increases in operating expenses due to the war conditions, an increase in fare was necessary to insure a continuance of good service and the solvency of the company. The commission declined to hear the case on the ground that it did not have jurisdiction, owing to the Indianapolis franchise being a special grant of the Legislature. This opinion was upheld by the circuit court of Marion county. The opinion of the supreme court sets out that in this particular case the fixing of the rate of fare was not left to the municipality, as is sometimes done, but that the state granted the right to make the present system of fares to the utility as a condition for using a part of the highway system of the state, and the city was not a necessary party, only acting as the agent of the state in incorporating the existing rate schedule in the franchise under which the company operates. "The Public Service Commission is a legislative agency, assumed to be qualified by knowledge and experience to regulate public utilities of the state with reasonable fairness and substantial justice, not only to the public but to the utility as well," the court said in explaining the character of the body in which the Legislature has invested the rate-making power, which may, under Sec. 122 of the utility commission act, be applied even where contractual relations exist, to relieve a utility in an emergency such as that faced in the present war conditions. The court states that the franchise rate would continue to hold, except for Sec. 122, which gives the commission broad powers in an emergency. The court adds that the utility law, and particularly that section, should be liberally construed with a view to the public welfare. Then, it argues, if a utility is in the midst of such an emergency as the present, the commission may take action toward relief as a temporary measure even if contractual obligations would block such relief as a permanent blessing to the utility.

CITY PLANNING AND HOUSING

Steel Company's New Housing Plan.

Youngstown, O.—The Carnegie Steel Co. has announced plans for the expenditure of \$250,000 in this city in a housing project for the benefit of employees. This development is in addition to the \$2,000,000 housing project the corporation has under way at McDonald, a near-by suburb.

Vast Housing Plans for "Most Congested District."

Norfolk, Va.—The Bureau of Industrial Housing and Transportation of the Department of Labor announces the completion of plans for housing projects in the Hampton Roads district. "This is probably the most congested district in the United States," according to the official statement. The navy yard at Portsmouth, the Newport News Shipbuilding & Dry Docks Co. at Newport News, and the Railroad, Food, and Fuel Administrations have depots there. The war population is estimated at from 50,000 to 70,000. The housing corporation is planning four developments in the region. The first is designed for the Norfolk district, near the Army and Navy bases. About 500 houses of 5 and 6 rooms each will be built for white workers. The contract for the construction of about 1,000 houses adjacent to the navy yard at Portsmouth, constituting the second development, has been awarded to the Hegaman-Harris Co., of New York City. This project also includes schools, shops, a fire station, and a motion-picture theatre. In Portsmouth about 300 houses will be built for the colored workers. These will be a story and a half in height and will consist of four and five rooms, and will be provided with all modern sanitary conveniences. The plans have been completed and have already been distributed to the interested contractors. In all of these developments the problem facing the housing corporation is larger than the mere building of houses, be-

cause of the overburdened condition of all public utilities. In the Newport News section a large group of houses is nearing completion. These are being built under the direction of the Shipping Board. The homes thus provided will, however, fall short of the actual need, and accordingly the Bureau of Industrial Housing and Transportation is engaged on a survey to determine the extent of necessary additions. It is expected that housing will have to be provided for a large number of families of colored workers, as well as a considerable addition to the new community already in existence at Hilton.

Dormitories for Navy Yard Workers.

Washington, D. C.—Richardson & Burgess (Inc.), of Washington, D. C., have been awarded the contract for the construction of the fourteen dormitories and the mess hall and kitchen which are to be erected by the Bureau of Industrial Housing and Transportation for the accommodation of workers in the Washington Navy Yard. These buildings, constituting the first portion of the Navy Yard development, are designed to accommodate about 500 persons. In addition to the foregoing, it is proposed to erect fourteen apartment buildings and 300 houses to meet the needs of the navy-yard workers and their families. Plans for these structures are also well under way and it is hoped that actual construction will begin within the next few weeks.

Big Artillery Center for War Department.

West Point, Ky.—Work has just begun by the Construction Division of the Army on the new Field Artillery Training Center at West Point, Ky., near Louisville. The estimated cost for the land and the buildings, including a 500 bed hospital and a 500 horse veterinary hospital, is \$3,721,000. The tract of land is approximately 20,000 acres and was purchased for \$500,000. Work will be pushed so as to make the camp available as soon as possible.

Halls for Housing Employees in Capital.

Washington, D. C.—The Bureau of Industrial Housing and Transportation of the Department of Labor is building residence halls for war workers in the District of Columbia. Groups containing unit buildings, each consisting of 150 rooms, will be located at the Union Station Plaza and on the site bounded by Fourteenth, Fifteenth, and B streets and Ohio avenue NW. The land was owned by the Government and unused, and President Wilson issued an extensive order authorizing its use for housing. Each unit of 150 rooms will have its own office, reception room, sitting rooms, and other facilities. The units will be called residence halls and will be operated as hotels. Each room will measure 9 by 11 feet, and each will be provided with a clothes closet and running water, hot and cold. Shower baths and tubs and toilets will be provided for each group of about 25 rooms. The rooms are all designed for occupancy by one person. In the basements will be small supplementary laundries for the use of residents. Small kitchenettes are planned also in the basements. At the Union Station three groups of buildings are to be erected. Two groups will consist of three units, each unit having 150 rooms. The third group will consist of six units of 150 rooms each. At the Fourteenth and Fifteenth street site there will be five units of 150 rooms each. There will also be two apartment units consisting of three and four room apartments, numbering about 50 all told. The buildings will be of terra-cotta blocks covered with stucco, three stories in height. Each group will contain a central administration office and a public hall, in which dances and other public meetings may be held. Every individual unit will also possess a small hall. Apartments will be available for married couples. Plans are now being made for a building for men at the Union Station site. The George A. Fuller Company was awarded the contract for the work on the Union Station plaza. The award was made as a result of competitive bids, which will reduce the cost of the development to an absolute minimum. The estimated time of completion is three and one-half months. This project, constituting the first of the units, is designed to provide quarters for 2,000 persons.

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

City Building—Nuisance—Liability for Injuries.

(N.Y. Sup.) Though city of New York, which owned fee of property on which a jail was situated, allowed walls of building to so depreciate that it became unsafe, by reason of falling of bricks, and constituted a nuisance, city is not liable for injuries resulting from nuisance, as it was discharging governmental functions in respect to jail.—*Finkelstein v. City of New York*, 169 N. Y. S. 718.

Requisite Vote on Bond Issue—Women's Votes.

(Iowa) In voting on municipal bond issue, under Code Supp. 1913, § 1306e, requiring a majority of all the electors voting at such election, and more than one-half the vote at the last preceding municipal election, the fact that women are authorized to vote, under Code 1897, § 1131, upon such bond issue, does not permit their votes to be counted in determining whether more than half of the electors who voted at the last municipal election favored the issue of bonds, but the comparison is between male voters.—*Sears v. City of Maquoketa*, 166 N. W. 700.

Bids for Bonds—Legality—Forfeited Deposit.

(Ga. App.) Bid for municipal bonds requiring a certified copy of transcripts establishing their legality satisfactory to bidder's attorney prior to bidder's acceptance was conditional, and attorney's bona fide opinion against legality would prevent forfeiture and require return of deposit made with bid.—*City of Rome v. Breed, Elliott & Harrison*, 95 S. E. 474.

Upon bid for municipal bonds, conditioned on certified copy of transcripts establishing legality of issue to satisfaction of bidder's attorney, the question is not whether the bonds were valid, but whether attorney's opinion was rendered in good faith.—*Id.*

In suit to recover forfeited deposit accompanying conditional bid for municipal bonds, where opinion of bidder's attorney was that legality of issue was not satisfactorily shown, as required, held, on the evidence, that direction of verdict for plaintiff was not error.—*Id.*

Metropolitan Park District—Government Function—Responsibility.

(Wash.) The regulation and maintenance of public parks is a governmental function of municipal corporations, and not a private or proprietary act, so as to render it liable for violation of penal statute.—*State v. Metropolitan Park Dist. of Tacoma*, 171 P. 254.

(Wash.) Neither metropolitan park districts, created municipal corporations by Rem. Code 1915, § 5835 et seq., nor any municipal corporation, can be guilty of violating Rem. Code 1915, § 6580a.—*State v. Metropolitan Park Dist. of Tacoma*, 171 P. 254.

Oiling Highway—Excessive Estimate—Liability of Contractor For Injury.

(N.J.) Company, contracting to sprinkle highway with oil in such excessive quantity as to create a public nuisance, owed no duty to bicyclist who was thrown and injured on highway, and was not liable to him for performance of contract; the negligence charged being non-performance.—*Lydecker v. Board of Chosen Freeholders of Passaic County*, 103 A. 251.

Company, contracting to sprinkle highway with oil, was not liable to third party for injury resulting from city's mistake in estimate as to quantity required, unless work and method of performance was obviously likely to create a nuisance, or was inherently dangerous, as known to contractor.—*Id.*

Where injury from falling from bicycle onto highway was result of performance of contract to sprinkle oil on highway, and not of any act independent of contract, or in violation of it, and work was not inherently dangerous, contractor owed no duty to plaintiff, and was not liable.—*Id.*

NEWS OF THE SOCIETIES

Aug. 27-29.—LEAGUE OF CITIES OF THIRD CLASS IN PENNSYLVANIA. Nineteenth annual meeting, Erie, Pa. Secretary, Fred. H. Gates, city clerk, Wilkes-Barre, Pa.

Aug. 27-30.—DOMINION ASSOCIATION OF FIRE CHIEFS. Annual convention, Toronto, Ont. Secretary, chief James Armstrong, P. O. Box 56, Kingston, Ont.

Sept. 17-20.—PACIFIC COAST ASSOCIATION OF FIRE CHIEFS. Annual convention, Oakland, Cal. Secretary, chief Harry W. Bringhorst, Seattle, Wash.

Sept. 24-27.—INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS. Annual convention, Atlanta, Ga. Secretary, Clarence R. George, Houston, Tex.

Sept. 25-26.—AMERICAN WATER WORKS ASSOCIATION, Central States Division. Annual convention, Pittsburgh, Pa. Secretary, R. F. Bricker, Shelby, O.

Oct. 2-4.—AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS. Annual meeting, Buffalo, N. Y. Secretary, Charles Carroll Brown, 304 E. Walnut St., Bloomington, Ill.

Oct. 7-9.—AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Annual meeting, Chicago, Ill. Acting secretary, A. D. Williams, Morgantown, W. Va.

Oct. 14-17.—AMERICAN PUBLIC HEALTH ASSOCIATION. Annual meeting, Boston, Mass. Secretary, 126 Massachusetts Ave., Boston, Mass.

Oct. 17-19.—KANSAS PUBLIC SERVICE ASSOCIATION. Annual convention, Kansas City, Kan. Secretary, W. W. Austin, Cottonwood Falls, Kan.

Nov. 14-15.—WASHINGTON STATE GOOD ROADS ASSOCIATION. Annual convention, Pasco, Wash. Secretary, Clancey M. Lewis, Seattle, Wash.

American Public Health Association.

Which health officer should stay at home and who should go to war? How is the nation bearing up under the war-strain? What are the special wartime health menaces of the civil population, and what are we going to do about them? What headway are we making against the venereal diseases? These are the questions to be considered at the convention of United States and Canadian sanitarians at Chicago, Oct. 14-17, to be held under the auspices of the American Public Health Association. Some of the military sanitarians who will address the meetings are Surgeon General Gorgas, Colonel Victor C. Vaughan, and Major William H. Welch of the Army Medical Corps. Other speakers of the general sessions will be George H. Vincent, president of the Rockefeller Foundation; Dr. Charles J. Hastings, president of the American Public Health Association; Dr. W. A. Evans, Assistant Surgeon General Allan J. McLaughlin, U. S. P. H. S.; Dr. Ernest S. Bishop, Dr. Lee K. Frankel, Dr. Frederick L. Hoffman and others.

There will also be papers upon laboratory, industrial hygiene, vital statistics, food and drugs, sanitary engineering, sociological, and general health administration subjects.

As the health of the civil population has a direct bearing upon the winning of the war, mayors and governors are being requested to send their health

officers to the conference in spite of the present high cost of government.

Further information can be obtained from A. W. Hedrich, secretary, American Public Health Association, 1041 Boylston street, Boston, Mass.

Engineering Institute of Canada.

The second general professional meeting of the Engineering Institute of Canada was held Aug. 8, 9 and 10 at Saskatoon, Sask., with about fifty members present from outside the district.

The first session dealt with highway problems, the feature being papers by the engineers and deputy ministers of highways of the three prairie provinces. The meeting passed a resolution appointing a committee of representatives of each province to investigate and formulate standard specifications for earth roads for rural communities. President H. H. Vaughan, of Montreal, presided at the opening of the meeting, and Dr. Walter C. Murray, president of the University of Saskatchewan, welcomed the members. Location, construction and maintenance of earth roads was the subject of H. R. MacKenzie, chief field engineer, highways department of Saskatchewan. M. A. Lyons, chief engineer of the Good Roads Board of Manitoba, discussed the work in his province, while J. D. Robertson, engineer of highways of the Department of Public Works of Alberta, discussed

practice and results in that province. W. H. Greene, assistant city engineer of Moose Jaw, and H. S. Carpenter, deputy minister of highways for Saskatchewan, discussed road financing. The committee on earth roads consists of H. S. Carpenter, deputy minister of highways, Regina; M. A. Lyons and J. D. Robertson.

The evening session was devoted to water supply and sanitation questions. "Rural Community Water Supplies" was the subject of a paper by E. L. Miles, inspecting engineer, department of sanitation, Calgary. George D. Mackie, city commissioner of Moose Jaw, discussed the irrigation of a large area of Saskatchewan in order to provide land for returned soldiers.

Concrete was the subject of the Friday morning session. A paper by B. S. McKenzie, of Winnipeg, was read by H. M. Thompson, chemist, of Winnipeg. F. C. Field's paper on Alberta's experiences with concrete was read by A. S. Dawson, of Calgary. Prof. Duff A. Abrams, of Chicago, explained how the study of concrete had been carried on at his institute during the last four years. W. C. Chace, engineer of the Winnipeg Water District, spoke of sewer construction in winter in order to relieve unemployment conditions as unsatisfactory. H. McIvor Weir, assistant city engineer of Saskatoon, pointed out in his paper that the main business section of Saskatoon is built on an alkali slough. Deterioration of sewer manholes built in 1906-7 was first noted in 1910, and these man-

(Continued on page 160.)

PROBLEMS CITIES ARE STUDYING WITH EXPERTS

STREET IMPROVEMENTS are being made by Sylvania, O., according to plans and specifications prepared by W. J. Sherman.

Brodhead, Wis., is to build a **HYDRO-ELECTRIC PLANT**. Preliminary estimates have been prepared by the Power Engineering Company.

Henrylyn Irrigation district, Weld county, Hudson, Colo., is constructing a **RESERVOIR** and other structures. The engineer for the improvements is F. H. Whiting.

A **SANITARY SEWER SYSTEM** and **SEWAGE DISPOSAL PLANT** are to be built by Garner, Ia., from plans and specifications prepared by J. G. Thorne.

Improvements to the **WATERWORKS** and **ELECTRIC LIGHT PLANT** are to be made by Inverness, Miss. The consulting engineer for the work is Xavier A. Kramer.

Lateral SEWERS to cost about \$65,000 are to be built by Duncan, Okla., plans and specifications for the improvement having been completed by the Benham Engineering Company.

A **RESERVOIR** is to be built by Livingston, Mont., the consulting engineering firm of Burns & McDonnell having planned the work.

Repairs to cost about \$100,000 are to be made to the Cambridge, Mass., **RESERVOIR**. The engineer for the improvements is Geo. A. Johnson.

A **FILTRATION PLANT** is proposed for Pawhuska, Okla. Preliminary surveys are being made by the consulting engineering firm of Archer & Stevens.

An auxiliary **PUMPING SYSTEM** is to be installed in the waterworks of Coalinga, Cal. Plans and specifications for the improvement were prepared by the engineer, F. G. Dessery.

A **CONCRETE BRIDGE** is to be built by Unionville, Ont., from plans and specifications prepared by the consulting engineering firm of James, Loudon & Hertzberg.

The Cottonwood Drainage district, Marion, Kan., is constructing a **DRAINAGE SYSTEM**. The plans for the improvement were prepared by the Tuttle-Ayers-Woodward Engineering Co.

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

LOADING DEVICE.

For Handling Heavy Materials on Mack Truck.

A very practical and effective equipment for handling concrete blocks, stone, brick and similar material has been installed on a Mack truck owned by the Hydro Stone Products Co., Chicago, Ill. For taking time and trouble out of loading and unloading this device appears to be worthy of wide acceptance.

According to data presented by J. K. Harridge, president of the Hydro Stone Products Co., the loading platform is built on a 5½-ton Mack chassis, made by the International Motor Company, New York City. The platform is 13 ft. long and 7½ ft. wide; the height of chassis platform and hoisting beam is 11½ ft. over all—which enables it to clear the average street car viaduct in Chicago. The truck is 17 ft. long, projecting a little less than 4 ft. beyond the end of the platform. The entire installation was made in two weeks at a cost of \$450 by the Hendrickson Motor Truck Co. The hoisting apparatus is equipped with a two-ton chain hoist, so that the stone can be piled in such a manner that two tons may be lifted. The six tons capacity can be filled and unloaded in three lifts. The chain hoist is made by the Ford Chain Block Co., Philadelphia, and is known as the "Triblock." One hand can operate the chain hoisting block unless the maximum load is lifted, when ordinarily both hands are required. A screw adjustment on the front part of this appliance keeps the overhead track in a horizontal position, although truck is standing on a grade or uneven ground.

Each load is about six tons, hauled from 9 to 20 miles. Forty-five miles a day have been averaged in addition to time of loading and unloading. The company manufactures concrete blocks and concrete trim stone in all sizes and shapes. The officials have been studying the problem of economical

handling of the smaller pieces of material and have decided on handling them by packing from a ton to a ton and a half in a platform which is hoisted directly to the truck and unloaded in the same manner, the number of platforms depending on the size of load. Boxes have been built to handle two tons of the smaller units, which are packed and spotted in place for quick hoisting. They are unloaded at the job in the same way; if much hauling is to be done on a particular job, these boxes are left at the job for unloading, being picked up on the next trip. A box for handling sand, crushed stone, etc., can be set on the platform and the hoist used for raising the front end for dumping. It takes about 20 minutes to load the truck in three operations, handling two tons each time.

During last month this truck was operated 1,675 miles and hauled 366 tons. A total of 11½ gallons of oil was used and 357 gallons of gasoline, or 4.7 miles per gallon.

Two views of the outfit are shown in the illustrations on the next page.

BACK WATER AND SEWER GAS VALVE.

Pennie's Improved Type, Adjustable to Any Position.

The accompanying illustrations show sections and a photographic view of Pennie's back water and sewer gas valve. The device is designed to be a perfect seal against back-water, gas and vermin and is installed on the waste pipe leading to the main sewer. The sanitary advantages of the equipment are obvious and more than desirable.

Durability is especially aimed for in construction, materials and workmanship. The disc, seats, axle, pivots and screws, cover, bolts and nuts are made of a non-corrosive brass of a special composition proved to be best by long use. The valve will stand smoke and similar agents.

The device will fit either standard or extra heavy soil pipe. The size ranges include 2, 3, 4, 5, 6, 8, 10 and 12 inches. It is positive in operation and will operate to any position. It is also adjustable to any position. When used upright or inclined, the cup is taken off and sufficient lead poured in the cup to make it swing to required angle. The valve or disc need not be removed while cup is being weighted.

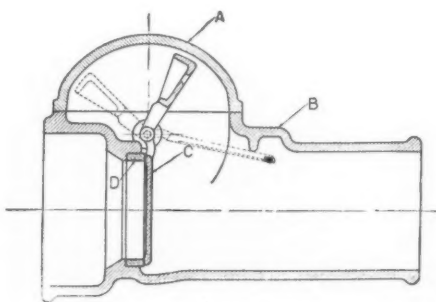
The valve is made by the Kennedy Valve Manufacturing Co., Elmira, N. Y.

INDUSTRIAL NEWS

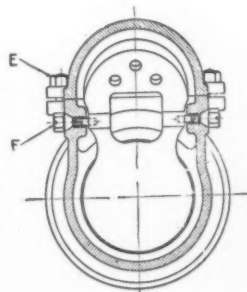
Cast Iron Pipe.—While the pig iron supply for pipe manufacturers is not adequate, plants are maintaining reasonably high production, especially of pipe used in the government's housing and cantonment developments for which pig iron is assured by the War Industries Board. Quotations: Chicago: 4-inch, \$64.80; 6-inch and larger, \$61.80; Class A, \$1 extra. New York: 4-inch, \$64.75; 6-inch and larger, \$61.75; Class A, \$1 extra.

Fuel Administration to Control Petroleum Products.

President Wilson has issued an executive order in which he states that "in order to avoid duplication of effort, and in the interest of economy and the more efficient concentration of the Government and for the better utilization of resources and industries, it is desirable that there shall be a standardization of specifications for the supply of petroleum and its products to the United States Government." He orders that "the function, power, and duty of preparing and adopting specifications for the supply of petroleum and its products to any and all departments, bureaus, agencies, and offices of the Government be transferred to and exercised by the United States Fuel Administrator. The United States Fuel Administrator shall exercise such functions, powers, and



A—Cover } Cast
B—Body } Iron
C—Disc — Bronze
and Cast Iron
D—Seat Ring—
Brass
E—Bolt and Nut—
Bronze
F—Side Screw—
Brass



BACK WATER AND GAS SEWER VALVE (Showing construction and operation).

duties through a committee on standardization of petroleum specifications, which shall be composed of the following members: A chairman, who shall be appointed by the United States Fuel Administrator; one member who shall be appointed by the Secretary of War; one member who shall be appointed by the Secretary of the Navy; one member who shall be appointed by the chairman of the Shipping Board; one member who shall be appointed by the Director General of the Railroad Administration; one member who shall be appointed by the Director of the Bureau of Mines; and one member who shall be appointed by the Director of the Bureau of Standards.

"The specification so prepared and adopted shall be binding upon and govern all departments, bureaus, agencies, and offices of the Government. It shall further be the duty of the United States Fuel Administrator, acting through said Committee on Standardization of Petroleum Specifications, to take all proper means to bring about a standardization of petroleum specifications for the purchases in the United States of the allied Governments.

This order shall be and remain in full force and effect during the continuance of the present war and for six months after the termination thereof by the proclamation of a treaty of peace, or until amended, modified, or rescinded."

The Chicago Pneumatic Tool Co. announces that contract has been let and work started on the erection of an up-to-date addition to its Cleveland plant, which is planned to double the present output. It is expected that work will be completed on the building itself about November first. The necessary equipment has been ordered and it is believed will be delivered and ready for installation by the time the building is completed, so that the additional production contemplated will be available very soon thereafter.

Wallace & Tiernan Company, Inc., 137 Center street, New York City, manufacturers of chlorine control apparatus and sanitary engineering specialties, announce that H. M. Freeburn, formerly assistant engineer of the Pennsylvania state department of health, has become associated with the company's engineering staff.

NEWS OF THE SOCIETIES

(Continued from page 158.)

holes had to be renewed in the alkali localities, whereas those built in ground free of alkali are still in service and in good condition. Mr. Weir also cited several cases of deterioration in the foundations of down-town stores and dwellings. He concluded that proper drainage helps to preserve concrete in alkaline soils, and that waterproofing with pitch or tar does not always prevent alkaline action on concrete.

On Friday afternoon, James White, of Ottawa, discussed with coal, natural gas, petroleum, electricity, peat and wood as the fuels of Western Canada. E. J. Stone, assistant secretary of the Canadian Railway War Board, spoke on the coal situation. E. C. Hanson, former city electrical engineer of Saskatoon, spoke on his experiences with the combustion of lignites. Prof. R. D. MacLaurin, of the University of Saskatchewan, gave a short address on the possibilities of straw gas as fuel. A report of a sub-committee of the Honorary Advisory Council for Scientific and Industrial Research on the briquetting of lignites and the plans for the proposed plant at Estevan, Sask., which the Dominion government is to erect at a cost of \$400,000, was read by R. A. Ross.

The city council of Saskatoon tendered a banquet to the visitors on Friday evening.

The program for Saturday morning included papers by F. H. Peters, of Calgary, on "Legislation Governing the

Status of Engineers," and "Cooperation with the Canadian Mining Institute," and also other papers on legislation by C. P. Richard, W. F. Brereton and W. M. Edwards. The meeting concluded with an excursion Saturday afternoon to various points of engineering interest in and near Saskatoon.

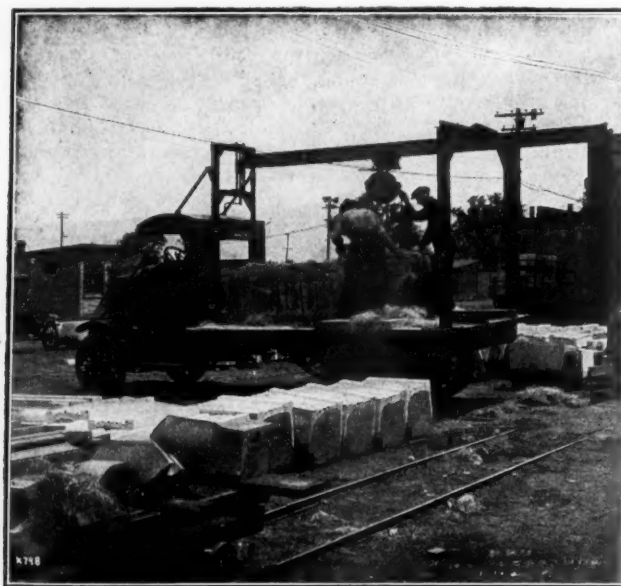
Smoke Prevention Association.

The Smoke Prevention Association is holding its annual convention in Newark, N. J., Aug. 20-30. The program arranged by Daniel J. Maloney, smoke inspector of Newark, vice-president of the association, includes papers on "Proper Hand Fire Practice in Relation to Firing Furnaces as Applied to Heating Plants," and "Boiler Room Efficiency."

National Safety Council.

An interesting feature of the annual meeting of the National Safety Council which is to be held in St. Louis, Mo., Sept. 16, will be a whole day devoted to the methods of accident prevention in construction work. At this meeting steps will be taken to organize a permanent construction section of the council.

The construction program, which will occupy the time of the congress during the morning and afternoon session of Sept. 18, will include the following papers: "Organizing for Safety—How to Secure the Cooperation of Superintendents, Foremen and Men"; "Safe Construction of Scaffolds and False Work"; "Effect of Accident Prevention on Insurance Rates"; "Accident Prevention in the Shipbuilding Program"; "Benefits of Accident Prevention in Contracting"; "Handling Material, by Machine and by Hand," and "How a Small Contractor Reduced Accidents." S. J. Williams, manager of the accident prevention division, National Safety Council, Chicago, is in charge of the program.



LIFTING AND LOADING WITH CHAIN HOISTS AND BEAM ON MACK TRUCK.

ADVANCE CONTRACT NEWS

ADVANCE INFORMATION BIDS ASKED FOR

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

CONTRACTS AWARDED ITEMIZED PRICES

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Pa.	Johnstown	Aug. 24	Improving 5.3 mi. with vitrified brick on concrete base..	W. Mosholder, Pres. Bd. of Supvrs., Upper Yoder Twp., P. O. Box 277.
Wis.	West Allis	noon, Aug. 24	5,417 sq. yds. pavement, concrete curb and gutter.....	E. G. Orbert, City Engr.
Minn.	Marble	2 p.m., Aug. 26	Improving about 0.75 mi. of road.....	C. E. Dickens, Twp. Clk.
Minn.	Wabasha	Aug. 26	Grading about 14 miles.....	C. Matthies, Co. Supt. of Hwys.
O.	Struthers	noon, Aug. 26	Paving improvements	Geo. Montgomery, Engr.
Ala.	Geneva	Aug. 26	10.85 mi. road improvement.....	W. S. Keller, St. Hwy. Engr., Montgomery, Ala.
Minn.	Chaska	2 p.m., Aug. 27	Graveling 26.5 mi. of road.....	J. B. Connolly, Co. Aud.
Mo.	St. Louis	noon, Aug. 27	Improving alleys with concrete and vitrified brick.....	E. R. Kinsey, Pres. Board of Public Service.
Minn.	Young America	2 p.m., Aug. 27	Graveling road	County Clerk.
Minn.	Aitkin	2 p.m., Aug. 27	Highway construction involving 16 acres clearing, 8 acres grubbing, ditching, etc.....	H. C. Beecher, Co. Aud.
O.	Columbus	noon, Aug. 27	Grading, draining, curbing and paving with asphalt or brick	Geo. A. Borden, Dir. of Pub. Serv.
N. Y.	New York	noon, Aug. 27	Regulating and repaving with granite block on concrete foundation	C. D. Van Name, Boro. Pres. Richmond, St. George, S. I.
Minn.	Willmar	Aug. 28	Grading 23-mi. of highway, 16 ft. wide.....	K. L. Wadell, Co. Engr.
N. J.	Trenton	10:30 a.m., Aug. 28	52,800 sq. yds. concrete surfacing.....	A. Lee Grover, Chief Clerk State Highway Comrs.
Mass.	Salem	10 a.m., Aug. 28	Paving with granite blocks, cement grout, on cement base	Geo. F. Ashton, City Engr.
O.	Yorkville	noon, Aug. 29	Street improvements	J. A. Hagan, Boro. Clerk
Colo.	Denver	Aug. 29	Grading and draining 21 miles ditch and crown work and 21 miles shale surfacing	State Hwy. Com.
Pa.	Yorktown	Aug. 29	Paving with vitrified brick.....	Village Council.
Ind.	Indianapolis	10 a.m., Aug. 30	Constructing concrete road.....	Leo K. Fesler, Co. Aud.
Mich.	Lansing	Aug. 30	Paving 3.1 mi. of road, 15 ft. wide, gravel, macadam or stone base with gravel top.....	State Hwy. Dept.
Pa.	Harrisburg	10 a.m., Aug. 30	Reconstruction of following pavements: 5,309 ft. one-course plain concrete, Beaver Co.; 12,173 ft. water-bound macadam on telford foundation, Bedford Co.; 20,482 ft. one-course plain concrete, Berks Co.; 5,443 ft. vitrified block, Blair Co.; 5,745 ft. bituminous concrete on concrete foundation, Delaware Co.; 4,566 ft. vitrified block on concrete foundation, Elk Co.; 10,560 ft. one-course plain concrete and 15,918 ft. one-course plain concrete or bituminous concrete on concrete foundation, Erie Co.; 18,920 ft. one-course plain concrete, Mercer Co.; 7,824 ft. one-course plain concrete, Tioga Co.; 3,319 ft. grading and drainage, Washington Co.....	J. Denny O'Neill, State Highway Commissioner.
O.	Columbus	2 p.m., Aug. 30	Grading and improving following roads: 2.80 mi. water-bound macadam, Brown Co.; 2.04 mi., 0.5 mi. and 0.73 mi. waterbound macadam, Clermont Co.; 1.98 mi. and 1.19 mi. monolithic-brick, Coshocton Co.; 2.5 mi. water-bound macadam on concrete, Harlin Co.; 4.38 mi. bituminous macadam, waterbound macadam or concrete and gravel and 4.69 mi. bituminous macadam waterbound macadam or concrete, Highland Co.; 2.01 mi. water-bound macadam, Licking Co.; 3.65 mi. waterbound macadam, Mahoning Co.; 2.205 mi. waterbound macadam, Morgan Co.; 0.445 mi. tarbound macadam and 0.596 mi. concrete, Muskingum Co.; 1.2 mi. reinforced concrete, Pauling Co.; 1.39 mi. concrete, Vinton Co., and 3.81 mi. waterbound macadam, Williams Co.....	State Highway Commission.
O.	Columbus	2 p.m., Aug. 30	Maintenance and repair work as follows: grading and bituminous macadam 1 mi., Medina Co.; repairing old road for foundation and paving with brick 0.81 mi., Mahoning Co.....	State Highway Commission.
N. M.	Santa Fe	Aug. 31	Constructing 21.8 mi. state road, including grading and gravel surfacing	State Highway Commission.
O.	Burton	Aug. 31	Improving a number of streets.....	Theodore Myleb, Vil. Clk.
O.	Rocky River	Sept.	1. Grading, draining, curbing and paving with asphalt, 5-in. concrete or brick block to cost about \$40,000.....	E. H. Arnold, Town Engr.
O.	Woodsfield	Sept.	2. Road construction	I. O. Swallow, Co. Aud.
Ind.	Richmond	11 a.m., Sept.	2. Two 4-horse King road graders or their equal.....	Lewis S. Bowman, Co. Aud.
Tenn.	Nashville	Sept.	2. Road construction on three sections, 2½, 12½ and 11 miles in Franklin, Bedford, Moore and Greene counties, to cost about \$250,000.....	A. M. Nelson, State Highway Engineer.
Ind.	Nashville	1 p.m., Sept.	2. Constructing stone or gravel road.....	Omer Morrison, Co. Aud.
Utah	Ogden	10 a.m., Sept.	3. Constructing sidewalks, curb and gutters.....	City Engr.
Ind.	Mt. Vernon	2 p.m., Sept.	3. Constructing three gravel roads.....	Jos. R. Haines, Co. Aud.
Ind.	Kokomo	10 a.m., Sept.	3. Constructing stone road.....	Wm. L. Benson, Co. Aud.
N. J.	Trenton	10:30 a.m., Sept.	4. Constructing 12,668 sq. yds. bituminous concrete pavement (Topeka) in Gloucester Co., and 47,800 sq. yds. concrete pavement in Middlesex and Somerset Counties	A. Lee Grover, Chief Clerk State Hwy. Com.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Pa., Harrisburg	.....10 a.m., Sept.	5..	Reconstructing 9,550 ft. one-course plain cement concrete, Venango Co.; 5,600 ft. one-course plain cement concrete, Lancaster Co.; 2,085 ft. and 9,156 ft. one-course plain cement concrete and 404 ft. hillside vitrified block, Westmoreland Co.; 26,112 ft. vitrified block on concrete foundation or one-course plain cement concrete, Fayette Co.; 7,783 ft. one-course plain cement concrete and hillside vitrified block on concrete foundation, Warren Co.....	J. Denny O'Neil, State Hwy. Comr.
Pa., Harrisburg	.....10 a.m., Sept.	5..	Constructing following roads: 26,112 ft. vitrified block or plain concrete, Fayette Co.; 5,600 ft. plain concrete, Lancaster Co.; 5,700 ft. water bound macadam, Lebanon Co.; 9,550 ft. plain concrete, Venango Co.; 7,782 ft. hillside vitrified block and plain concrete, Warren Co.; 9,156 ft. plain concrete, 404 ft. hillside vitrified block, and 2,085 ft. plain concrete, Westmoreland Co.....	J. Denny O'Neil, State Hwy. Comr.
Mo., Jefferson City	...10 a.m., Sept.	5..	Grading, surfacing with gravel and macadam 22.5 miles 9 ft. wide and 3.9 miles 16 ft. wide.....	E. F. C. Harding, Co. Hwy. Engr.
Miss., McComb	.....2 p.m., Sept.	6..	Improving 21 and 14 miles of highway in two districts..	C. F. Sherman, Engr.
Tex., Falfurrias	.....10 a.m., Sept.	9..	Excavating, grading, repairing subgrade and placing caliche surfacing on 20 miles of road.....	O. D. Kirkland, Co. Clk.
Ariz., Bisbee	.....Sept.	14..	Grading two road sections	J. C. Ryan, Co. Hwy. Engr.
N. Mex., Santa Fe	.....Sept.	16..	Constructing 15.45 mi. of state road involving 4.182 mi. road grader work, 12,085 cu. yds. two-course crushed rock surfacing and 62,602 cu. yds. excavation.....	State Hwy. Com.

SEWERAGE.

O., East Youngstown	...noon, Aug.	26..	Constructing storm water sewer.....	Joseph E. Julius, Vil. Clk.
Pa., Clairton	.....Aug.	26..	Constructing 2,500 ft. 8-in. vitrified terra cotta sewer, involving 2,280 cu. yds. excavation; 275 ft. 12-in. sewer, involving 500 cu. yds. excavation.....	H. M. Gates, Boro Clk.
O., Columbus	.....noon, Aug.	27..	Installing sewer connections.....	Geo. A. Borden, Dir. of Pub. Serv.
N. Y., New York	.....11 a.m., Aug.	28..	Constructing sewers on a number of streets.....	Edward Riegelmann, Boro. Pres., Brooklyn
N. Y., Albany	.....2:30 p.m., Aug.	29..	Sewerage system at Sing Sing prison, Ossining, N. Y....	Lewis F. Pilcher, State Archt.
Ont., Waterloo Twp.	.....Aug.	31..	Constructing drain	P. A. Snider, Twp. Clk.
Utah, Ogden City	...10 a.m., Sept.	3..	Constructing pipe sewers.....	City Engrs.

WATER SUPPLY.

S. D., Pierre	.....7 p.m., Aug.	26..	Power plant equipment for water works as follows: Two 200 r. p. m. Unaflo engines for direct connection with generators (two alternatives); two 312 (or 250) k. w. 3-phase, 60-cycle, 2,400-volt, 200 r. p. m. a. c. generators, complete with exciters; one 7-panel switchboard; one 35-k. v. a. 6.6 ampere, constant current, series transformer; two 250-h. p., 165 lbs. working pressure water tube boilers; two 8x5x12 Simplex boiler feed pumps; two 300-h. p. open type feed water heaters, one condenser equipment 9,000 steam per hr.; one triplex pump, surface type, 13x12, 150 lbs. working pressure; one chimney (concrete, common brick or radial brick) 125 ft. high; one brick power plant building with concrete coal bin; one 750,000-gal. concrete reservoir...	Henderson Engr. Co., Omaha, Neb.
O., Columbus	.....noon, Aug.	27..	Laying water service pipe.....	Geo. A. Borden, Dir. of Pub. Serv.
N. Y., Albany	.....2:30 p.m., Aug.	29..	Water supply system at Sing Sing prison, Ossining, N. Y....	Lewis F. Pilcher, State Archt.
O., Sandusky	.....noon, Aug.	31..	Construction and installation of two water tube boilers with trimmings and smoke breeching; steam water blowoff; feed and drip connections; brick work, and one 400-hp. open feed water heater, including tearing out of old machinery and pipe lines at water works plant.	Geo. M. Zimmerman, City Mgr.
Okla., Okmulgee	.....Sept.	1..	Extending mains and constructing new pumping station to cost about \$385,000.....	City Clerk.
O., Freeport	.....6 p.m., Sept.	2..	Water works improvements, including cast-iron pipe lines, valves, hydrants and appurtenances.....	W. J. Sherman Co., Engrs., Toledo, O.
N. D., Grafton	.....8 p.m., Sept.	2..	Laying 6-in. and 4-in. water mains.....	J. H. Johnson, City Aud.
S. C., Liberty	.....Sept.	2..	Constructing water works system.....	J. F. Banister, Chrm. Bd. of Pub. Wks.

LIGHTING AND POWER.

Mich., Detroit	.....Aug.	27..	Two oil engine-driven air compressors for Harbor Beach fog signal; two oil or gasoline engine driven d. c. 250-volt, 3½-kw. electric generating sets for Keweenaw waterway light station.....	Lighthouse Superintendent, 341 Post Office Bldg.
N. Y., Albany	.....2:30 p.m., Aug.	29..	Additions to central heating plant; underground piping and conduit work; feeder system at Sing Sing prison, Ossining, N. Y.....	Lewis F. Pilcher, State Archt.
Ind., Greenfield	.....2 p.m., Sept.	3..	Erecting smokestack at county heating plant.....	County Auditor.
O., Marshallville	.....noon, Sept.	7..	Improving, repairing and furnishing machinery for municipal electric light plant.....	F. E. Kieffer, Village Clerk
Colo., Denver	.....2 p.m., Oct.	1..	Furnishing 5,000-kw. vertical hydraulic turbine and generator	U. S. Reclamation Service, Washington, D. C.

BRIDGES.

Minn., Madison	.....Aug.	24..	Reinforced concrete bridge, consisting of four 24-ft. slab spans and one 40-ft. deck girder span.....	A. G. Skogren, Co. Aud.
O., Upper Sandusky	11:30 a.m., Aug.	24..	Constructing culverts	W. P. Reilly, County Aud.
Wis., Milwaukee	10:30 a.m., Aug.	24..	Constructing reinforced concrete bridge.....	Percy Braman, Comr. of Pub. Works.
La., New Orleans	10:20 a.m., Aug.	25..	Furnishing and constructing on foundations furnished, four double track railway and highway Strauss trunnion bascule bridges at sites of railway crossings of inner harbor navigation canal.....	John R. Loomis, Pur. Officer, 833 Canal St.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
O., St. Clairsville.....	Aug. 26..	Constructing four reinforced concrete bridges, two culverts and two retaining walls.....	E. W. Hopkins, Co. Aud.	
Minn., Marble	2 p.m., Aug. 26..	Bridge construction	C. E. Dickens, Twp. Clk.	
Ind., Evansville	10 a.m., Aug. 26..	Constructing five and repairing one reinforced concrete bridges	C. P. Beard, Co. Auditor.	
Minn., Aitkin	2 p.m., Aug. 27..	Constructing culverts	H. C. Beecher, Co. Aud.	
Cal., San Diego.....	Aug. 28..	Constructing 960 ft. reinforced concrete bridge.....	Bd. of Co. Supvrs.	
R. I., Providence.....	noon, Aug. 28..	Constructing reinforced concrete arch bridge 56 ft. long, 30 ft. wide and 40 ft. span; removing present structures and realigning highway.....	State Board of Pub. Roads.	
Pa., Merion Station.....	Aug. 30..	28 ft. clear span reinforced concrete arch bridge.....	J. Denny O'Neill, State Hwy. Comr., Harrisburg, Pa.	
Pa., Harrisburg	10 a.m., Aug. 30..	Constructing bridge, 28 ft. clear span.....	J. Denny O'Neill, State Highway Commissioner.	
O., Dayton.....	10 a.m., Aug. 31..	Constructing extension to bridge.....	Walter H. Aszling, Co. Clerk	
N. D., Mandan.....	Sept. 2..	Constructing two pile bridges 40 ft. long.....	E. R. Griffin, Co. Surv.	
O., Canton	10 a.m., Sept. 2..	Constructing concrete bridge.....	W. C. Schick, Co. Clk.	
S. D., Parker.....	2 p.m., Sept. 3..	Constructing bridges, abutments and approaches; repairs	V. B. Clikeman, Co. Aud.	
Mo., Jefferson City...	10 a.m., Sept. 5..	Constructing culverts and bridges.....	E. F. C. Harding, Co. Hwy. Engr.	
Ore., Baker.....	Sept. 7..	Constructing three steel bridges with concrete abutments	County Clerk	
N. D., Cavalier.....	Sept. 7..	Reinforced concrete abutments.....	W. W. Selson, Co. Aud.	
O., Columbus	Sept. 9..	Constructing concrete bridge, including excavating and building sub- and superstructures, to cost about \$67,000.....	J. J. Dim, Co. Engr.	
Tex., Falfurrias	10 a.m., Sept. 9..	Constructing concrete bridge and culverts.....	O. D. Kirkland, Co. Clk.	
Ill., Rockford	Sept. 10..	Constructing 12-span reinforced concrete arch bridge, 780 ft. long and 30 ft. wide, to cost about \$84,500.....	A. R. Cater, Engr.	
Ariz., Bisbee.....	Sept. 14..	Constructing bridges and culverts.....	J. C. Ryan, Co. Hwy. Engr.	
N. Mex., Santa Fe.....	Sept. 16..	120-ft. steel span bridge, four 31-ft., six 21-ft. and 2,630 lin. ft. corrugated iron culvert; 350 cu. yds. concrete head walls; retaining walls.....	State Highway Com.	
Mont., Great Falls.....	noon, Sept. 16..	Constructing reinforced arch bridge, about 1,200 ft. long, 29.6 ft. roadway and 7-ft. sidewalk.....	John E. Moran, County Clerk	
MISCELLANEOUS.				
Ga., Homer	Aug. 24..	Constructing drainage canal, 7¼ miles long, involving 163,407 cu. yds. excavation.....	W. D. Alexander, 412 N. Graham St., Charlotte, N. C.	
N. C., Wilmington.....	Aug. 24..	Improving drainage system.....	W. K. Allen, Engr. Lyon Swamp Drainage and Levee Dist.	
Ont., Port Burwell....	noon, Aug. 29..	Constructing sheet pile revetment wall.....	R. C. Deschrochers, Sec. Dept. of Pub. Wks., Ottawa, Ont.	
N. Y., Schenectady..	2:30 p.m., Aug. 31..	Furnishing three bodies for motor truck chasses.....	Bd. of Contract & Supply.	
Mont., Whitehall	Sept. 5..	Constructing earth dam, involving 40,000 yds. earth excavation and 20 miles main canal with 10 miles laterals, to cover at least 4,000 acres.....	G. E. Baker, Consult. Engr.	
O., Cincinnati	10 a.m., Sept. 9..	Constructing guide walls at locks at Valley View and Ford, Ky.; guard walls at locks at College Hill, Ravenna, Willow and Heidelberg, Ky.; partial demolition and rebuilding of guide wall at lock at Heidelberg....	B. F. Thomas, Dist. Engr., U. S. Engineer Office, Room 415 Custom House.	
Tex., El Paso.....	Oct. 1..	Constructing canals on Rio Grande irrigation project, involving about 63,800 cu. yds. excavation, near Hatch, New Mexico	U. S. Reclamation Service, Washington, D. C.	

ROADS AND STREETS

Ozark, Ark.—For building 24½-mile gravel road, 12 ft. wide, from Franklin to Johnson Co. line, through Altus, Ozark and White Oak, to Franklin Co. line. Franklin Co. had plans prepared by State Highway Comm., Little Rock. About \$108,838.

Fairfield, Cal.—Solano county is to receive the services of a government engineer in determining plans for the betterment of the road situation.

San Diego, Cal.—City receiving proposals in September for building highway from Center St. in La Jolla to Pacific Beach, 20 ft. wide; about \$79,562. Work involves 367,600 sq. ft. 5-in. concrete pavement, oil screening and surfacing, grading, culverts, cement curbing, concrete guttering, etc. G. Cromwell, City Engr.

Hamden, Conn.—Town received no bids to grade and pave road in State St. from city line to Ridge road.

Lewiston, Ida.—Council has directed property owners to construct a cement sidewalk 8 ft. wide on 5th St. and has taken favorable action looking toward construction of retaining wall on the S. D. Dent property south of 1st Ave.

Rock Island, Ill.—An ordinance was considered for the construction of sidewalks on the east and west sides of 43d St. between 15th and 18th Aves. and on the south side of 15th Ave., between 42d and 44th Sts. This work involves the laying of 10,500 square ft. of cement walk at an estimated cost of \$2,010.

Crown Point, Ind.—No bids were received by the Lake county commission-

ers for a road to be constructed in Cedar Creek township, and Auditor Foland reports that the matter has been "held up until after the war."

Fort Wayne, Ind.—Bids received Sept. 16, 1918, at 11 a. m., by treasurer of Allen county, for sale \$11,200 improvement bonds, 4½ per cent., ten years. Wm. F. Ranke, treasurer.

Greenfield, Ind.—There were no bidders for the \$31,500 of highway improvement 4½ per cent. 10-year Hancock county bonds.

South Bend, Ind.—St. Joseph Co. lets contracts soon for construction of Union St. near city limits, Mishawaka. This is known as Bremen road, and work will be started late this month, it is said.

Davenport, Ia.—\$100,000 will be spent by city to open and improve new additions in which Government will erect homes for workers, if recommendation of Finance Committee is adopted by City Council. Money will be used to open and grade streets, for installation of street lights and other necessary improvements in new additions.

Davenport, Ia.—City council petitioned for paving Scott St. from Norwood Ave. to Park la. with asphalt.

Davenport, Ia.—City council petitioned for paving of Eola St. from Locust to Prairie St. and for straightening of gutters and grading on both sides of Dover Court between Carey and Bridge Aves.

Davenport, Ia.—City council discussed the grading of the following streets in connection with the government's housing plans: Park lane from Harrison to Western Ave.; Garfield St. from Harrison to Gaines St.; Hayes St. from Harrison to Scott St.; Grant St. from Harrison to Scott St.; Grand Ave. from South Ave. to 33d St.; Arlington Ave. from South Ave. to 33d St.; Farnam St. from South Ave. to 33d St.; 31st St. from Farnam St.

to Arlington Ave.; 33d St. from Brady St. to Arlington Ave. Bids will be called at the next meeting.

Des Moines, Ia.—The Bankers' Trust and Mortgage Co., of Des Moines, purchased \$126,000 worth of refunding bonds offered by the Polk county board of supervisors, at par and a premium of \$1,750. The Merle Hay Road issue takes \$107,000 of the amount, the remainder being in general obligations and bridge funds.

Muscatine, Ia.—Muscatine county plans building 1 mile class A gravel road at Blue Grass Rd. on Great White Way.

Sioux City, Ia.—City council authorized the paving of 37th St. from Jackson to Jones.

West Clinton, Ia.—Engr. E. B. Lorenzen finishing plans for Clinton county for road repairs, \$55,372.30.

Wichita, Kan.—Resolution adopted to curb, gutter and pave Madison Ave. from the south line of First St. to the south line of Second St. L. W. Clapp, mayor.

Easthampton, L. I.—A new road is soon to be opened here connecting Main St. with Egypt lane.

Bangor, Me.—City will replace wood block paving at the corner of State and Exchange St. with granite paving.

Bangor, Me.—Council acted favorable on petitions for repairs in Sidney St. concrete sidewalks in Oak St. and repairs of sidewalk in Main St., near Cedar.

Bangor, Me.—Council voted to have a new granolithic sidewalk on Main St. from Hammond St. to Middle and from West Market Sq. to Water St.

Salem, Mass.—City Engineer George F. Ashton receiving bids soon for paving Boston St. from Essex to Goodhue with granite blocks set on a cement base and grouted with cement. City has appropriated \$46,000 for the work and bonds are being issued to cover the amount. The

government committee on Capital Issues has approved the work.

Detroit, Mich.—Council rejected bids for paving Sherwood and Mt. Elliott Aves.; will readvertise.

Great Barrington, Mass.—See "Bridges." **Battle Creek, Mich.**—A sidewalk was offered built on Elm St., across the flats in front of the Consumers' Power Co.'s plant; will run from Van Buren St. to Marshall St. Mayor Wilson.

Lewiston, Mont.—New road to be built across the Divide from Beckett to N-Bar Ranch will mean a cut-off of 6 or 7 miles. County commissioners will shortly call for bids, it is understood.

Roundup, Mont.—Musselshell county sold an issue of funding road and bridge bonds, \$150,000, to John E. Price & Co., of Seattle, Wash.

State of Nebraska.—State board of irrigation, highways and drainage improvement of the public highways, of all matters pertaining to the improvement of roads within the state and the progress made on surveys, plans, and construction of the various state-aid projects, status of road work for which projects have been surveyed: Washington-Burt road, approximately 27.1 miles earth road, awaiting approval; plans completed. Project No. 4, Cedar-Wayne road (Hartington to Wayne), approximately 38.2 miles earth road, awaiting approval; plans completed, awaiting approval. Project No. 5, Norfolk-Columbus road, approximately 48.10 miles earth road; approved plans completed; estimate revised, awaiting approval. Kearney-Pleasanton road, approximately 16.27 miles earth road, awaiting approval; plans completed. Litchfield-Broken Bow road, Custer county, approximately 31.78 miles earth road; awaiting approval; plans completed. Project No. 12, Stapleton-Ringgold road, approximately 17.10 miles earth road, approved; plans approved, to be revised. O'Neill-Butte road, approximately 42 miles earth road, awaiting approval; 10 per cent. plans complete; portion of road to be resurveyed. Harrison-Whitney road, approximately 54.70 miles earth road, 5 per cent. plans completed; portion of road in Sioux county to be resurveyed. Project No. 17, Havelack-Waverly road, approximately 10 miles earth road, approved; plans completed, awaiting approval. Alliance-Antioch road, approximately 14.80 miles earth road, sand clay surface, submitted; plans completed, awaiting approval project statement. Nebraska City-Plattsmouth road, approximately 33.90 miles earth road, 60 per cent. plans completed; survey complete. Indianola-Redwillow road, approximately 8 miles earth road; survey complete. Hyannis-Whitman road, approximately 12.90 miles earth road, 33 per cent. plans completed; survey complete. Fremont-Ceresco road, approximately 34.50 miles earth road, 40 per cent. plans completed; survey complete. Seward-Aurora road, approximately 39.89 miles earth road, 40 per cent. plans completed; survey complete. Hamlet-Imperial road, approximately 27.50 miles earth road, 2 per cent. plans completed; survey complete. St. Paul-Grand Island road, approximately 17 miles earth road; survey complete. Fremont-Ames road, approximately 5.94 miles concrete road, plans complete (holding plans awaiting action local authorities). Genoa-Albion road, approximately 24 miles survey completed. Curtis to Stockville, East, in Frontier county, approximately 21 miles; survey completed. Douglas county-Lincoln highway road, approximately 20 miles, submitted plans started; survey completed. The following surveys are being made: Cambridge to Oxford road, approximately 32 miles, now complete; 19 per cent. complete; 59 per cent. surveyed. Wakefield to Ponca road, approximately 27 miles; now complete. 15 miles; 56 per cent. surveyed. Schuyler to Columbus road, approximately 15 miles; now complete, 6.5 miles; 13 per cent. surveyed. Broadwater to Oshkosh road, approximately 29 miles; now complete, 21.5 miles; 74 per cent. surveyed. Geo. E. Johnson, state engineer. E. H. Morey, assistant state engineer. A. S. Mirick, chief road engineer.

Lincoln, Neb.—City Clerk Theodore H. Berg will receive sealed bids August 30 for \$95,150 5½ per cent. annual 1-10-year serial paving bonds.

Morristown, N. J.—The Morris county board of freeholders reconsidered its former approval of brick and amiesite for the road through Rockaway borough, and in its stead approved specifications calling for concrete and brick.

Elmira, N. Y.—Chemung board of su-

pervisors voted to appropriate \$4,400 to help defray the expenses of extending the South Main St. pavement into the town of Southport, which will also contribute \$100 toward the cost of building the road.

Long Island City, N. Y.—The Chamber of Commerce of the borough of Queens has had prepared petitions which have been signed by leading business men of both Jamaica and Far Rockaway urging the immediate improvement of Rockaway Turnpike, in the borough of Queens, from Locust Ave. to the Nassau county line at Hook Creek. The improvement of this highway for a distance of about two miles will provide a route 5 to 6 miles shorter to and from the Rockaway section and at the same time give immediate relief to the present dangerous congestion of vehicular traffic on the Merrick Rd., which is now used by vehicles to reach the Rockaway section.

Long Island City, N. Y.—Public improvements to cost more than \$10,000 will be undertaken in the Long Island City, Elmhurst, Flushing and Jamaica districts, following orders that were given by Borough President Connolly. Approval was given to plans and specifications and as authorization has been made by the board of estimate bids will be received on the work within a week. The improvements consist of important pavements and regulation work. In the Long Island City section sheet asphalt pavements are to be laid in Fulton Ave. and Main St. from Stevens St. to Van Alst Ave., and in Fulton Ave. from the Boulevard to Stevens St. These streets are in the heart of the business section of Astoria and they are to replace worn out pavements. In the Woodhaven section of the Fourth Ward, Myrtle Ave. is to be paved with sheet asphalt from Lincoln to Jamaica Aves. Hunterspoint Ave. from Van Dam St. to Borden Ave., in the Long Island City section, is to be regulated and graded. In the Elmhurst section Cameron Terrace from Woodside Ave. eastward is to be regulated and graded and sidewalks laid. In the Flushing section sidewalks are to be laid on Jamaica Ave. from Sanford Ave. to Franklin Pl. where necessary, and on Grove St. from Main St. to Joe Pl. In the Ridgewood section sidewalks and gutters are to be laid in Palmetto St. from Fresh Pond Rd. to Prospect Ave.

Charlotte, N. C.—Charlotte township will receive funds approximating \$10,000 to \$12,000 from the amount received by the Mecklenburg county commissioners from the state highway commission to build and repair roads within the township as its share of auto licenses money. State engineer, W. S. Fallis.

Canton, O.—Ordinance approved to establish the grade of 15th St. N. E. from Edward Ave. N. E. to Superior Ave. N. E. C. E. Poorman, mayor.

Columbus, O.—The state treasurer purchased \$60,300 worth of Lucas county inter-county highway improvement bonds for the state industrial commission, at par and accrued interest.

Columbus, O.—Sealed proposals will be received by Clinton Cowen, state highway commissioner, Aug. 30, for improvements in Brown county on Section "N" of the Cincinnati-West Union Road, I. C. H. No. 30, Clark township; for grading roadway, constructing bridges and culverts and paving with waterbound macadam; width, pavement 16 ft., roadway 26 ft., length 14,821.5 ft., or 2.80 miles; estimated cost of construction, \$54,378.45; date set for completion, Aug. 1, 1919. Clermont county on Section "K-1" of the Cincinnati-Chillicothe road, I. C. H. No. 8, in Goshen township; for grading roadway, constructing bridges and culverts and paving with waterbound macadam; width, pavement 14 ft., roadway 24 ft., length 10,755 ft., or 2.04 miles; estimated cost of construction, \$27,610.72; date set for completion, Aug. 15, 1919. Clermont county on Section "F-1" of the Cincinnati-West Union road, I. C. H. No. 30; for grading roadway, construction culverts and paving with waterbound macadam; width, pavement 16 ft., roadway 26 ft., length 2,615 ft., or 0.5 mile; estimated cost of construction, \$9,978.53; date set for completion, Dec. 15, 1918. Clermont county on Section "J" of the Bethel-Chilo road, I. C. H. No. 258, in Franklin township; for grading roadway, constructing culverts and paving with waterbound macadam; width, pavement 14 ft., length 4,094 ft., or 0.78 mile; estimated cost, \$11,080.79; date for completion, Dec. 15, 1918. Coshocton county on Section "A" of the Cambridge-Coshocton road, I. C. H. No. 349, in Tuscarawas township; for grading roadway, con-

structing bridges and culverts and paving with monolithic brick; width, pavement 16 ft., roadway 26 ft., length 10,453 ft., or 1.98 mile; estimated cost, \$58,269.28; date for completion, Aug. 1, 1919. Coshocton county on Section "C-1" of the Newark-Coshocton road, I. C. H. No. 347, in Jackson township; for grading roadway, constructing bridges and culverts and paving with monolithic brick; width, pavement 16 ft., roadway 26 ft., length 6,300 ft., or 1.19 mile; estimated cost of construction, \$40,300.85; date set for completion, Aug. 1, 1919. Hamilton county on Section "B" of the Harrison road, I. C. H. No. 42, in Whitewater township; for constructing concrete bridge, the approaches thereto and also temporary bridge; estimated cost of construction, \$43,731.50; date set for completion, July 1, 1919. Hardin county on Section "A-4" of the Bellefontaine-Kenton road, I. C. H. No. 226, in Buck township; for grading roadway, constructing drainage structures and paving with one of the following types: waterbound macadam, estimated cost of construction \$36,176.65; plain concrete, \$59,462.65; width, pavement 16 ft., roadway 26 ft., length 13,200 ft., or 2.5 miles; date for completion on either type, Aug. 1, 1919. Highland county on Section "A" of the Hillsboro-Chillicothe road, I. C. H. No. 258, in Liberty township; for constructing a concrete bridge over Clear Creek; estimated cost, \$8,918.75; date for completion, Dec. 15, 1918. Highland county on Section "B" of the Hillsboro-Chillicothe road, I. C. H. No. 258, in Paint township; for grading roadway, constructing bridges and culverts and paving with one of the following types: Bituminous macadam, estimated cost of construction, \$75,120.80; waterbound macadam, estimated cost of construction, \$75,120.80; concrete and gravel, estimated cost of construction, \$75,258; width, pavement 16 ft., roadway 25 ft., length 23,105 ft., or 4.38 miles; date set for completion on either type, Dec. 1, 1919. Highland county on Section "C" of the Hillsboro-Chillicothe road, I. C. H. No. 258, in Paint township; for grading roadway, constructing bridges and culverts and paving with one of the following types: Bituminous macadam, estimated cost of construction, \$93,950.35; waterbound macadam, estimated cost of construction, \$93,950.35; concrete, estimated cost of construction, \$93,918.39; width, pavement 16 ft., roadway 26 ft., length 24,740.9 ft., or 4.69 miles; date set for completion on any type, Aug. 1, 1919. Licking county on Section "E-4" of the Newark-Mt. Vernon road, I. C. H. No. 337, in Newark township; for grading roadway, constructing bridges and culverts and paving with waterbound macadam; width, pavement 16 ft., roadway 26 ft., length 10,618 ft., or 2.01 miles; estimated cost, \$33,521.42; date for completion, foundation Dec. 15, 1918; remainder, July 1, 1919. Mahoning county on Section "D" of the Youngstown-Lisbon road, I. C. H. No. 82, in Beaver township; width, pavement 16 ft., roadway 28 ft., length 19,250 ft., or 3.65 miles; for grading roadway and paving with waterbound macadam; estimated cost of construction, \$72,124.50; date for completion, July 1, 1919. Morgan county on Section "H" of the McConnellsville-Athens road, I. C. H. No. 16Q, in Penn township; for grading roadway, constructing drainage structure and paving with waterbound macadam; width, pavement 14 and 20 ft., roadway 26 and 30 ft., length 11,642 ft., or 2.205 miles; estimated cost of construction, \$42,306.15; date set for completion, Aug. 1, 1919. Muskingum county on Section "L-2" of the Zanesville-Cincinnati road, I. C. H. No. 10, in Newton township; for grading roadway, constructing drainage structures and paving with tarbound macadam; width, pavement 16 ft., roadway 26 ft., length 2,350 ft., or 0.445 mile; estimated cost of construction, \$17,100; date set for completion, Dec. 1, 1918. Muskingum county on Section "M-2" of the Janesville-Dresden road, I. C. H. No. 344, in Muskingum township; for grading roadway, constructing drainage structures and paving with concrete; width, pavement 14 ft., roadway 26 ft., length 3,150 ft., or 0.596 mile; estimated cost of construction, \$16,430.09; date for completion, Dec. 15, 1918. Paulding county on Section "D" of the Van Wert-Ft. Wayne road, I. C. H. No. 419, in Benton township; for constructing culverts and paving with reinforced concrete; width, pavement 16 ft., roadway 26 ft., length 6,363 ft., or 1.2 mile; estimated cost of construction, \$27,968.52; date for completion, July 1, 1919. Vinton county on Section "J-2" of the McArthur-Chillicothe road, I. C. H. No. 365, in Richland

township; for grading roadway, constructing bridges and culverts and paving with concrete; width, pavement 16 ft., roadway 26 ft., length 7,356 ft., or 1.39 mile; estimated cost of construction, \$43,098.50; date set for completion, Aug. 1, 1919. Williams county on Section "L" of the Bryan-Pioneer road, I. C. H. No. 306, in Madison township; for grading roadway, constructing bridges and culverts and paving with waterbound macadam; width, pavement 16 ft., roadway 26 ft., length 20,101.7 ft., or 3.81 miles; estimated cost of construction, \$72,883.43; date set for completion, Aug. 1, 1919. Medina county on Section "A" of I. C. H. No. 25 of the Cleveland-Wooster road, in Medina and Brunswick townships; for grading roadway and paving with bituminous macadam; width, pavement 16 ft., roadway 26 ft., length 5,280 ft., or 1 mile; estimated cost of construction, \$15,075.83; date set for completion, Dec. 1, 1918. Mahoning county on Section "R-2" of the Akron-Youngstown road, I. C. H. No. 18, in Jackson township; for repaving old road for foundation and paving with brick; width, pavement 16 ft., roadway 26 ft., length 4,260 ft., or 0.81 mile; estimated cost of construction, \$20,880.07; date set for completion, Dec. 15, 1918.

Lakewood, O.—Street improvement bonds to the amount \$120,000 were purchased by the Wm. R. Compton Co. of St. Louis. A. O. Guild, director of finance.

Toledo, O.—A proposed bond issue of \$50,000 for street repairs was approved by a council committee. Service Director Goodwillie.

Erie, Pa.—Within short time, work on 2½ miles paved road, extending from Erie through towns of Union City, Union Township and Le Beuf Township to near covered bridge on Waterford road, will be started. State engineers from Harrisburg are now going over ground making survey in preparation for beginning of work. As now proposed roadway will have a width of 18 ft. within city limits through which it passes and a breadth of 16 ft. within the townships. 50% of cost will be paid by State, according to apportionment, in which County Commissioners must compensate 25% of cost and townships and city must each pay 25%.

Harrisburg, Pa.—State Highway Commissioner J. Denny O'Neill has certified for payment to eligible second-class townships in Clarion county, sums totaling \$16,548.41, which will be paid to them during the year. This is their share of the 1911 cash road tax bonus, and the money will be at the disposal of the township supervisors for the purpose of improving township roads and bridges, providing the plans conform with the standards set by the bureau of township highways of the state highway department: Ashland (Knox No. 1), Beaver (Blairs Corners), Clarion (Showers), Elk (Shippensville), Farmington (Lucinda, Box 23), Highland (Miola), Knox (Lucinda), Licking (Sligo, No. 2), Madison (Rimersburg, No. 2), Millcreek (Fisher), Monroe (New Bethlehem), Paint (Shippensville, No. 1), Perry (Parkers Landing, No. 2), Piney (Sligo, No. 2), Porter (New Bethlehem, No. 1), Redbank (Fairmount City, No. 1), Richland (Foxburg), Salem (Knox, No. 3), Toby (Rimersburg), Washington (Venus).

Harrisburg, Pa.—Eligible second-class townships in Cambria county will receive amounts totaling \$10,152.36, according to certifications by State Highway Commissioner J. Denny O'Neill. This amount represents the 1911 cash road tax bonus due to the townships that filled all requirements. Cambria county has over 900 miles of township highways, and this road bonus money will be at the disposal of the township supervisors for various road and bridge improvement purposes: Adams (Sidman), Cambria (Ebensburg), Chest (St. Lawrence), Clearfield (Ashville), Cresson (Cresson), Dean (Dysart), East Carroll (Carrolltown), East Taylor (Mineral Point), Elder (St. Bonifacius), Gallitzen (Amsbry), Jackson (Mineral Point, No. 1), Lower Yoder (Johnstown, J. Street Box), Middle Taylor (Johnstown, No. 1), Munster (Cresson, R. D.), Portage (Portage), Richland (Johnstown, No. 3), Susquehanna (Barnesboro), Upper Yoder (Johnstown, No. 5), West Carroll (Carrolltown), West Taylor (Johnstown No. 1).

Harrisburg, Pa.—State Highway Comr. J. D. O'Neill Aug. 15 rejected bid which was received Aug. 1 for construction of 2,350 ft. of improved roadway, which was to have been built by State aid plan on Route 270 in Skippack Township, Mont-

gomery Co. Action was made necessary by reason of fact local authorities were not able to finance their portion of cost of project.

Harrisburg, Pa.—Every second-class township in Wayne county has qualified to receive its portion of the 1911 cash road tax bonus, which is to be distributed during the year, and State Highway Commissioner J. Denny O'Neill has certified for payment sums totaling \$17,496.41. Wayne county has over twelve hundred miles of township highways, and the supervisors may spend this road bonus money for various road and bridge improvement purposes, which include the construction of brick, concrete, water bound macadam, slag, gravel and flint roads. It may be spent to aid in paying the township's share of the cost of building a state-aid road; also for permanently widening, or otherwise improving township highways. Various types of culvert pipe may be purchased and installed and retaining walls may be built to support roads: Berlin (Honesdale, No. 4), Buckingham (Lake Como), Canaan (Waymart, R. D.), Cherry Ridge (Honesdale, No. 2), Clinton (Waymart, No. 1), Damascus (Tyler Hill), Dreher (Newfoundland), Dyberry (Dyberry), Lake (Cortez), Lehigh (Gouldsboro), Manchester (Equinunk), Mt. Pleasant (Pleasant Mount), Oregon (Carley Brook), Palmyra (Hawley), Paupack (Lakeville), Preston (Orson), Salem (Hamlin), Scott (Sherman), South Canaan (Ariel), Sterling (Elmhurst), Texas (Honesdale, No. 4), Lebanon (Honesdale, No. 3).

Harrisburg, Pa.—State Highway Commissioner J. Denny O'Neill has certified for payment to eligible second-class townships in Clearfield county sums totaling \$17,231.52 as their share of the 1911 cash road tax bonus, which is to be distributed during the year. Clearfield county has over sixteen hundred miles of roads in townships, and the supervisors may use this money for various road and bridge improvement purposes: Bell (McGees Mills), Bigler (Madera), Boggs (West Decatur), Bradford (Woodland), Brady (Luthersburg), Burnside (Mahaffey), Chest (Westover), Cooper (Kylertown), Decatur (Phillipsburg, R. D.), Goshen (Shawville), Graham (Morrisdale, R. D.), Greenwood (Bells Landing), Gulick (Smith Mills), Huston (Penfield), Karthaus (Karthaus), Lawrence (Clearfield), Penn (Grampian), Pike (Clearfield, No. 1), Sandy (Sabula, R. D.), Woodward (West Moshannon).

Harrisburg, Pa.—The bid of \$254,816.50, which was submitted on August 1 for building approximately 29,667 ft. of reinforced concrete roadway, 16 ft. wide, proposed for Route 97, between Ridgway and Johnsonburg, Elk county, was rejected Aug. 20, because the local authorities were not in a position to finance their portion of the cost of the project. Highway Commissioner O'Neill.

Seranton, Pa.—For repairing Jessup and Moosic Lake road from Ketchum Corners to intersection of Mountain road, and Grassy Island St., Winton Boro. Waterbound macadam. Contract soon let by Lackawanna County. C. P. Savage, Co. Controller.

Sunbury, Pa.—Borough received no bids for paving Reagan St. Geo. W. Keefe, Engr., 4th and Market Sts.

Newport, R. I.—Bureau Yards & Docks, Navy Dept., Washington, D. C., plans drawn road and walks, \$190,200, Codding Point, Newport, U. S. Government. C. W. Parks, chief.

Cuero, Tex.—The road bond election held in road district No. 4, including a part of Cuero and Thomaston, to determine the fate of a \$40,000 bond issue to improve a section of the Middlebush designated highway carried. State and federal supplementary aid had been pledged to the amount of \$35,000.

Olympia, Wash.—Council approved ordinance providing for the improvement of Farragut Ave. and Farragut Ave. extended from Jackson St. north along Farragut Ave. and Farragut Ave. extended to its intersection with West Bay Ave. and thence northward along West Bay Ave. to the Buchanan Lumber Co. Mill plant, by grading, graveling, draining, constructing any necessary culverts, sewers, bridges, sidewalks. Jesse T. Mills, mayor.

Seattle, Wash.—A resolution adopted by the council requests the county commissioners to submit to the voters at the November election the proposition of transferring \$100,000 of the balance left in fund of Project 24, for the improvement of Woodland Park Ave. and other

streets, to the aid of building and improving Westlake Ave. north and Dexter Ave.

Seattle, Wash.—Board of public works received plans from City Engineer Dimock for laying concrete walks on Ellis Ave. et al, estimated cost \$13,200; paving, etc., 4th Ave. South, \$215,000. Specifications include 300,000 cu. yds. earthwork, 14,700 sq. yds. monolithic paving, 6,560 ft. pipe, 17 hydrants, etc., and East Marginal Way and Michigan St. water main, \$165,000; specifications include 17,500 ft. 16-in. pipe, 700 ft. 12-in. pipe, 16 gates and 60 hydrants.

Seattle, Wash.—Board of public works approved plans for grading, etc., 35th Ave., S. W., and concrete walks on Newton St. and 8th Ave.

Madison, Wis.—The state highway commission is contemplating the following road improvements: 11.9 miles grading, shale surfacing, bridges and culverts in Juneau county, estimated cost \$29,900; 2.3 miles of grading, graveling, bridges and culverts in Pepin county, estimated cost \$13,612; 8.7 miles of grading, bridges and culverts in St. Croix county, estimated cost \$18,315; 7 miles grading, bridges and culverts in Taylor county, estimated cost \$17,600. F. F. Mengel, div. engr., Grand Rapids, Wis.

Rinelander, Wis.—N. H. Smith, Rinelander, drawing plans for resurfacing various streets.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Los Angeles, Cal.—Fairchild-Gilmore-Wilton Co. was the lowest bidder to pave the streets on both sides of the new Brand Blvd bridge at Ivanhoe, connecting the direct highway from Glendale to the heart of Los Angeles, \$92,000. City Engineer Hansen.

Denver, Colo.—Ford & Filsom, of Lamar, at \$19,519, for building 3¼ miles Lamar-Springfield road, Prowers County, Federal Project No. 6. State Highway Comm., Museum Bldg.

Coeur d'Alene, Ida.—Carscallen Drainage & Construction Co., Coeur d'Alene, for about \$140,000 by Kootenai county, clearing and grading 12.4 mi. Fourth of July Canyon National Forest Rd., 16 ft. wide, involving 78,621 cu. yd. grading, 36,246 cu. yd. rock, 1,575 cu. yd. surfacing, 5 bridges, 6 to 20 ft. long.

Decatur, Ill.—J. E. Carter, for the paving of Tuttle St. from Haworth to Boyd, at \$3,609.10. Mayor Dinneen.

Peoria, Ill.—Keokuk Quarry & Const. Co., Keokuk, at \$26,303, for building 8,286 ft. Section K, State Aid road, 16 ft. wide, concrete; involves 3,010 cu. yds. grading, 14,730 sq. yds. 7-in. concrete, 238 cu. yds. concrete for culverts, etc. By Peoria County.

Sterling, Ill.—N. B. Ridge, \$13,627; Seeler & Koehler, \$13,846; F. G. Giffrow, \$13,951, all of Sterling, low bidders paving W. 12th and W. 13th Sts., cement, by city.

Sioux City, Ia.—Hanlon & Oakes, for paving of 4th St. city council.

Ludlow, Ky.—Vastine & Powry Covington, Ky., about \$2,500, for cement walks at public school site, Board of education, H. J. Ardelmundt, secy.

Portland, Me.—Forgione & Romano Co., Fidelity Bldg., block paving, Congress St. from Weymouth to St. John St. Edward M. Hunt, comr. of pub. wks.

Arlington, Mass.—M. De Matteo, 146 Dudley Ave., Roslindale, Mass., at \$32,637, for highway in Arlington, Board of public works.

Boston, Mass.—Warren Bros. Co. for repaving with bitulithic pavement Norfolk St. from Corbet St. to Blue Hill Ave., \$77,485.58.

Concord, Mass.—A. G. Tomasello, 69 Gibson St., Dorchester, Mass., at \$29,735, for building state highway in Concord. State highway commission.

Detroit, Mich.—Brady Const. Co., Grand River, Ore., at \$25,324, including inspection, for paving Mackinaw St. from Grand River to Joy road. Asphaltic concrete on 6-in. concrete base. Involves 3,219 cu. yds. grading, 6,233 sq. yds. asphalt on 6-in. concrete base, 263 ft. circular Medina, Amherst curbing, etc. Board Pub. Wks.

Detroit, Mich.—Brady Const. Co., Grand River, Ore., (a) \$13,631, (b) \$8,122 (including inspection), (c) \$22,729, (f) \$43,126; *Detroit Asphalt Paving Co., 20 McGraw Bldg., (d) \$49,991 (including inspection), (c) \$31,708 (including inspection) for paving (a) Glendale St. from 12th to Ellen Sts., (b) Richton St. from Herman to Oakman Sts., (c) Helen Ave.

from 232 ft. east of Miller St. to northerly terminus, involving 6,873 cu. yds. grading, 12,283 sq. yds. asphaltic concrete on 6-in. concrete base, 734 ft. straight and 170 ft. circular curb, 23 cu. yds. concrete under and behind curb and 728 lin. ft. retaining stone, (d) Whitaker St. from Beard to Lawndale Sts., 26 ft. wide, 4,917 cu. yds. grading, 12,333 sq. yds. asphaltic concrete on 6-in. concrete base, 7,600 ft. straight and 371 ft. circular curb and 2.2 cu. yds. concrete under and behind curbs, (e) Sherwood St. from Strong to Miller Sts., 26 ft. wide, 3,530 cu. yds. grading, 3,106 sq. yds. asphalt on 6-in. concrete base, 3,318 ft. straight and 8 ft. circular curb, 95 cu. yds. concrete under and behind curb and 211 ft. retaining stone, (f) Linwood St. from Maidstone St. to Joy Road, 7,005 cu. yds. grading, 40 ft. wide, less double track 7,826 sq. yds. sheet asphalt, 544 sq. yds. granite block (to be furnished by city), 3,371 sq. yds. 6-in. concrete base, 5,153 lin. ft. curb, 151 cu. yds. concrete under and behind curb and 4,256 lin. ft. concrete to plaster at junction of pavement with car tracks.

Detroit, Mich.—Otis Cement Const. Co., 806 Drummond Bldg., about \$10,000, for paving Avery Ave. from point south of Marquette St., 725 ft. long, 26 ft. wide; asphaltic concrete base; involves 1,188 cu. yds. grading, 2,095 sq. yds. 6-in. concrete base, 1,430 new straight Amherst curbing, etc. Board Pub. Wks.

Oswego, N. Y.—Frank Ratigan, for building a concrete sidewalk in Fifth Ave. between West Bridge and Schuyler Sts., by Commissioner of Public Works P. J. Cullen, at 10 cts. a ft.

Cleveland, O.—Roch Bros., Clark and W. 25th St., at \$6,722, for repaving over sewer trench. Dept. of purchase and supplies.

Sylvania, O.—F. F. Marsh, R. D., at \$23,448, for paving and curbing in Summit and Erie Sts. Village council, W. J. Sherman, engr., Navy Bldg., Toledo, O.

Erie, Pa.—J. & M. Doyle, for the laying of concrete in Myrtle St. from 3d St. to 8th St. Street Director Elchhorn.

Harrisburg, Pa.—State Highway Comr. J. D. O'Neill, upon request of Stucker Bros. Const. Co., Harrisburg, Aug. 15 released them from proposal for construction of Oberlin road, which was submitted in March, this year, due to time limit having expired within which awards must be made under provisions of specifications upon which said proposal was made. Project called for construction of 0.24 miles vitrified block roadway, 26 ft. wide, and bid price was \$22,573.30, and was covered by State Aid Application No. 570.

Harrisburg, Pa.—Highway Commissioner O'Neill, Aug. 20, annulled the contract which was recently awarded to Booth & Flinn, Ltd., of Pittsburgh, for proposed construction of 5,091 ft. of plain concrete roadway 30 to 36 ft. wide on Route 119, in Ligonier borough, because of the inability of the borough officials to assume their share of the cost. The contract price was \$93,385.15.

Wilkes-Barre, Pa.—Warner-Quinlan Asphalt Co., Syracuse, N. Y., at \$3,000, for paving Barney St. City council, Fred H. Gates, clerk.

Richmond, Va.—E. H. Armentrout, by the administrative board, for grading an alley on the east side of Mechanicsville pike, extending from Fairmount Ave. to T St.; 65 cents a cubic yard.

Hoquiam, Wash.—A. J. McGarry, Seattle, low bidder for grading and filling Cherry St., \$8,000. City commission.

Seattle, Wash.—Sparger Concrete Co., for paving Ranier Ave., Graham St. to Thistle St., \$80,911. Board public works.

Seattle, Wash.—R. G. Stevenson, for paving Rainier Ave., 31st South to 57th South, \$32,009. Board of public works.

Seattle, Wash.—W. H. Smith, concrete walks on N. and W. 76th St. et al., at \$26,706. Board of public works.

SEWERAGE AND SANITATION

Globe, Ariz.—Benham Engineering Co., Oklahoma City, Okla., preparing plans for building 17 miles of sewer and a disposal plant, to cost approximately \$240,000. Bids received in Sept. for construction.

Great Lakes, Ill.—Bureau Yards & Docks, Navy Dept., Washington, D. C., receiving bids soon for changes and ad-

ditions to sewage disposal plant; about \$13,000. Spec. No. 3305.

Elmhurst, Ill.—For constructing a sewage disposal plant, involving 6,000 ft. 18-in., 325 ft. 15-in. vitrified tile sewer pipe, 172 ft. of 18-in. cast iron pipe sewer, 22 manholes, one concrete settling tank, one concrete dosing chamber, one concrete grit chamber, eight sand filter beds, two sand sludge beds, 1,143 ft. of 2-in. galvanized iron water pipe. All bids were rejected by Edwin Hancock, consulting engineer, Chicago; will readvertise.

Belle Plaine, Ia.—Engineer J. F. Thorne, Hawes Bldg., Clinton, Ia., drawing plans for installing three blocks 8-in. vitrified sewer pipe.

St. Paul, Minn.—Plans, specifications and estimates submitted by the commissioner of public works of materials for pump station for West St., Anthony Park sanitary sewer system, was approved.

Glen Ridge, N. J.—A resolution to enter into a contract with the Passaic Valley sewerage commission for use of the big flume will be introduced at the next meeting of the borough council by Chairman James W. Pierson of the special committee. This is in accordance with a decision reached some time ago. The initial cost to the borough will be approximately \$156,000. Mayor Henry S. Babbage.

Albion, Pa.—Plans prepared for the construction of sewerage system and sewage disposal plant, to cost about \$30,000, by city engineer, C. H. Hill, 24 Main St.

Waco, Tex.—A bond issue of \$350,000 to be added to an initial bond issue of \$225,000 was favored at an election here for a construction of sewage disposal plant and building additional sewer lines.

Richmond, Va.—City rejected all bids received Aug. 2 for constructing concrete sewer under tracks of Southern Ry. to carry Canoe Run. City Engineer Chas. E. Bolling.

Welland, Ont.—City council considering construction of sewers, \$20,000. D. T. Black, engineer.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Fagstaff, Ariz.—McLean & Walsh, El Segundo, Cal., only bidder for building complete sewerage system, cement or vitrified pipe; involves 41,650 ft. 8½-in. vitrified pipe, 114 manholes, etc. City.

Kingsburg, Cal.—Frederickson & Thoman, Fresno, Cal., was low bidder for constructing sewage disposal plant for the city, at \$30,976.

Sacramento, Cal.—J. W. Terrell, for installing sewers in 43d St., and in alley east of 49th St. M. J. Desmond, city clk.

Miami, Fla.—J. J. Quinn Co., Miami, for building sewer in Highland Park, \$27,660. Work involves furnishing and laying 13,000 lin. ft. 8-18-in. pipe, 35 manholes, 2 flush tanks, all in soft oolitic limestone.

Decatur, Ill.—O. W. Dawson, for improvement on the connection with the Staley-Wabash sewer. Mayor Dinneen.

Emmettsburg, Ia.—John Dooley, this city, for constructing sewers on Palmer St., from 15th to 17th Sts., at \$694. Work includes 660 ft. 8-in. pipe, one flush tank and one manhole.

Boston, Mass.—City will by day labor build the following sewers in Dorchester Ave. from Savin Hill to Dawson St., involving 18 and 10-in. earthen pipe and 3-ft. beam concrete, also 20-in., 15-in. and 12-in. earthen drains, about \$7,500. Also building 85 lin. ft. 5½-in. concrete surface drain in Archdale Rd., 75 lin. ft. 15-in. pipe surface drain in Waldron Rd., 35 lin. ft. 12-in. pipe surface drain in Mahler St., 40 lin. ft. 12-in. pipe surface drain in Lochdale Rd., 20 lin. ft. 10-in. sanitary sewer in Tollgate Rd., and in Washington St. between New York, New Haven & Hartford R. R. and Archdale Rd., including catchbasins, etc., about \$10,325. Building 30 catchbasins and connections with 6 manholes in Broadway, between Washington St. and Ft. Point Channel, Dartmouth St. between Tremont and Stuart Sts., Sudbury St. between Court and Merrimac Sts., and Tremont St. between Common and Dover Sts., about \$6,505.

Saginaw, Mich.—Thos. Eddy, Saginaw,

for installing sewers in Vanour St., by city council. H. H. Eyme, engr., City Hall.

Argyle, Minn.—Schruth & Jackson, Fargo, N. D., for constructing sewers and water systems, at \$53,000.

Trommald, Minn.—See "Water Supply."

Tonawanda, N. Y.—Queen City Plmg. & Htg. Co., 2672 Main St., Buffalo, N. Y., at \$17,387.80, for installing sewers in Williams St. Moss W. Simson, city clk.

Lockland, O.—J. B. McLane & Co., Newport, Ky., for laying 2,245 lin. ft. 12, 18, 30 and 36-in. sewer pipes in North Cooper, Westview and Pershing Aves., and Bacon St., at \$13,135.

North Braddock, Pa.—Phillips & George, 1007 Spring St., North Braddock, at \$1,994, for installing sewers in various streets. Boro. council, J. P. Jones, secretary.

Clovis, N. Mex.—C. Fisher & Co., Phoenix, Ariz., for constructing sewer and water works extensions involving 22,000 cast iron water pipe, 50 fire hydrants, 18,000 ft. sanitary sewer, 27 manholes, at \$21,119.

Eureka, S. Dak.—Philip Schamber, this city, for constructing additions to present sewer system, at \$1,604.

WATER SUPPLY

Phoenix, Ariz.—City voted Aug. 6 on issuing \$100,000 for a pumping system to add to the water supply and to aid in draining the underground reservoir supply.

San Francisco, Cal.—The following permits have been granted by the state water commission on applications filed with that body: Alexis Lemonton, Llano, 1½ cu. ft. per second of the underground waters of Mescal Creek, in Los Angeles county, for the irrigation of 80 acres of alfalfa and 76 acres of fruit trees and summer crops. Water to be diverted and conveyed to place of use by means of diversion dam 1 ft. high, 10 ft. long on top and 11 ft. long on bottom, tunnel and ditch 3¼ miles long; estimated cost of proposed diversion, \$5,000. J. B. Kelley and Wm. Griener, Aituras, 284 acre ft. per annum of the waters of the North Fork drainage area, Modoc county, tributary to the North Fork Pit River, for irrigation of 145 acres; main ditch to be 1.87 mile long, the estimated cost of the diversion being \$3,000. Knox & Leiser, Grafton, 2.27 cu. ft. per sec. of the waters of the Sacramento River in Sutter county, for the irrigation of 181.50 acres; the water is to be diverted by means of a 12-in. centrifugal Krogh pump, operating under a 15 to 20 ft. head, discharging into a main ditch ½ mile long. W. V. Butler, Olancha, 1-20th cu. ft. per sec. of the waters of a spring at the base of the Sierra Nevada Mountains, in Inyo county, for the irrigation of 118.05 acres; pipe line to ¾ mile long. Pierre Labrucherie, San Jose, 1.8 miner's inch of the waters of an unnamed stream in Santa Clara county, for agricultural live stock and dairy purposes; water to be conveyed by means of pipe line 400 ft. long. J. E. Mallon and R. E. Blevins of Colusa, C. L. Donohoe of Willows, Colbert Coldwell, J. W. Forgeus, A. E. Kern, M. F. Eisner and B. A. Banker of San Francisco, 100 cu. ft. per sec. of the waters of the Sacramento River, in Colusa county, for the irrigation of 3,977.30 acres of rice and general crops; water to be diverted by means of a pumping plant of 4 units (1 36-in., 1 30-in. and 2 18-in.) centrifugal pumps, directed connected with 4 electric motors, 1 375-hp., 1 300-hp., and 2 75-hp., and 1 30-inch centrifugal pump belt driven by a 250-hp. electric motor; life approximately 17 ft.; discharge is into a concrete basin at the head of canal 10½ miles long; estimated cost of construction \$20,000. The Blevins-Mallon Ditch Co. was granted a permit (No. 341) on Sept. 28, 1917, for the use of 142 cu. ft. per sec. of the water of the Sacramento River in Colusa county, as part of the same project. Herbert J. Hammond, Little Rock, 1 cu. ft. per sec. of the waters of an unnamed canon in Los Angeles county, for the irrigation of 80 acres; shaft to be sunk and water pumped to surface; pipe line to be 2½ miles long; estimated cost of diversion, \$5,000. Edward W. Stegman, Pasadena, 7-40th

cu. ft. per second of the waters of a spring in Los Angeles county, for the irrigation of 14 acres by means of a pipe line $\frac{3}{4}$ of a mile long. Fred W. Gundlach, Ruth, $\frac{1}{4}$ cu. ft. per second of the waters of Mad River, Trinity county, for the irrigation of 20 acres by means of a 3-in. centrifugal pump operated by a 7-hp. engine; estimated cost of proposed diversion, \$2,500. John Hauser, Acton, $\frac{1}{4}$ miner's inch from each of two springs known as Little Oak Springs in Los Angeles county, for the irrigation of 15 acres by means of a 1-in. pipe line $\frac{3}{4}$ of a mile long. Marshall Hewett Cook, Ozena, $\frac{1}{4}$ cu. ft. per sec. of the waters of Bear Trap Creek, tributary to Cuyama River, Ventura Co., for the irrigation of 10 acres; main ditch to be $\frac{1}{2}$ mile long. Rodney Jackson, Yankee Hill, 3 cu. ft. per second of the waters of Fraisher Creek, Butte Co., for quartz mining purposes. J. N. Tedford, Red Rock, 2,216 acre ft. per annum of the flood waters of Canyon Creek, Lassen Co., to be stored in Cold Spring reservoir for irrigation of 1,678 acres; main works consist of a diversion dam 8 ft. high, 30 ft. long on top and 10 ft. long on bottom, ditch 1 mile long, and storage dam 40 ft. high, 757 ft. long on top, 200 ft. long on bottom and 10 ft. wide on top; estimated cost of proposed works, \$18,000. Wm. W. Bird, Los Angeles, 10 cu. ft. per sec. of the waters of Deep Spring and 28 unnamed springs located around the borders of lake in Deep Springs Valley, Inyo county, for the irrigation of 1,560 acres; the waters will be collected at the point of diversion by means of suitable canals intercepting flow from said springs, and pumped to height of about 60 ft. into a canal, and thence carried to lands of applicant; cost of construction, \$15,000. Wm. W. Bird, Los Angeles, 30 cu. ft. per sec. from Wyman Creek, and 5 cu. ft. per sec. from Deer Creek, in Inyo county, for the irrigation of 7,000 acres. During the irrigation season applicant intends to cultivate about 2,800 acres and during the remainder of the year to irrigate the remainder of the area to increase the natural growth for grazing purposes; main ditch from Wyman Creek to be 5.55 miles long, and Deer Creek pipe line to be 2.92 miles long; diversion dams to be built of concrete, wood, earth and rock; total cost of construction, \$10,000. L. E. Blochman, Berkeley, direct diversion, 2 $\frac{3}{4}$ cu. ft. per sec.; storage, 75 acre ft. per annum of the waters of Bear Creek in Mariposa county, for agricultural purposes. Applicant proposes to irrigate 220 acres by pipe line and ditch about 2 miles long; cost of construction, \$3,000 for dam and \$3,500 for pipe line, ditches, etc. Southern California Edison Co., Los Angeles, Cal., 120 cu. ft. per sec. of the waters of Pitman Creek, in Fresno county, for direct diversion and storage in Huntington Lake, and 3,781 acre ft. per annum for storage in Pitman Creek Reservoir, for the development of electric power. It is proposed to store the waters of Pitman Creek and divert a portion of same to Big Basin Reservoir, on Big Creek, and the remainder directly into conduits leading to power plants below. It is proposed to construct a dam at Pitman Creek reservoir with dimensions 103 ft. high, 860 ft. long on top and 50 ft. long at bottom, of reinforced concrete, multiple arch buttress type; the estimated cost of the dam and conduit line to Big Basin Reservoir is stated at \$842,000. Two plants have been already installed on Big Creek, known as Big Creek Power Plants Nos. 1 and 2, and the company proposes to construct two additional plants below these. The water, after use in the four plants is to be returned to the San Joaquin River from the tail-race of Plant No. 4 in Madera county. Construction work on said project to be completed on or before July 21, 1921, and complete application of the water to the proposed use shall be made on or before the following dates: Big Creek Power Plant No. 1, Jan. 16, 1923; Big Creek Power Plant No. 2, Jan. 16, 1923; Big Creek Power Plant No. 3, Jan. 16, 1928, and Big Creek Power Plant No. 4, Jan. 16, 1930. Nelle & Jessica Don Carlos, Los Angeles, $\frac{1}{4}$ miner's inch of the waters of a small ravine tributary to Big Bear Lake, in San Bernardino county, for domestic use and lawn irrigation. Florence Silent, Los Angeles, 2-10 of 1 miner's inch of the waters of a small ravine in San Bernardino county, tributary to Bear Lake, for domestic use. R. H. Gilman, Los Angeles, $\frac{1}{4}$ cu. ft. per sec. of the waters of Hidden Springs, San Bernardino county, for camp purposes, and if sufficient can be developed, for placer washing of salts. Arthur L. Williams,

Yankee Hill, 2 $\frac{1}{2}$ cu. ft. per sec. of the waters of Shields Gulch, Butte county, tributary to the North Fork Feather River, for placer mining purposes. Albert Fischerfeller, San Francisco, $\frac{1}{4}$ cu. ft. per sec. of the waters of Palo Verde Lagoon, Imperial county, tributary to the Colorado River, for irrigation purposes; ditch to be 600 ft. long; the water will be pumped from the Palo Verde Lagoon with a 6-hp. engine; cost of proposed diversion, \$1,000. Austin Kramer, Grafton, 1.45 cu. ft. per sec. of the waters of the Sacramento River, in Sutter county, for irrigation and domestic purposes; diversion works to consist of a 12-in. centrifugal pump operated by a gasoline engine or electricity, to lift water out of the Sacramento River into the ditch, which will be 1 mile long; estimated cost of diversion, \$6,000. F. L. Moore, Hyampom, $\frac{1}{4}$ cu. ft. per sec. of the waters of Moores Creek, Trinity county, tributary to the South Fork Trinity River, for irrigation purposes.

San Francisco, Cal.—No bids received building 6-in. flexible joint submerged water pipe line at Naval Training Station by San Francisco Navy Yard. Spec. No. 3203.

Decatur, Ill.—City votes Sept. 4 on an ordinance providing for the issuance of water bonds, \$225,000. Dan Dinneen, mayor.

Davenport, Ia.—City council petitioned for water main on High St. from Davie St. to Wilkes Ave., thence north on Wilkes Ave. to Lombard St.

Kittery, Me.—Appropriation of \$200,000 has been made by the city for a new water main to supply water to navy yard.

Brunswick, Md.—City voted \$150,000 bonds to increase water supply.

Huntington (L. I.), N. Y.—At a meeting of the Huntington Association an appropriation was made for the committee on water and lighting to employ counsel to prepare plans for acquiring or installing a municipal water plant. It is said that the present private plant of the Huntington Water Works Co. is insufficient to meet the needs of the growing community with its 8,000 population.

Valatie, N. Y.—The \$2,000 bonds issued by the village for extraordinary water system repairs have been bought by the Hudson City Savings Institution and James E. Snyder, of Valatie, each taking \$1,000.

Honea, Path, S. C.—Chiquola Mills plans construction of a water system for the village.

Bay City, Tex.—Will lay 1 mi. 4-in. wood pipe and buy two 4-in. large flow meters. John Sutherland, mayor.

Galveston, Tex.—A. T. Dickey, Supt. Water Works Dept., requested permission of Board to place orders for machinery to be used on water works pumping station, amounting to \$1,117.46.

Lynchburg, Va.—The capital issues committee at Washington has approved the sale of \$210,000 of the city's water bonds which had been sold subject to that approval. Funds are to complete improvements to the city water system.

Richmond, Va.—Ordinances from the utilities committee providing for the laying of mains and cables and other improvements necessary to supply the proposed boiler plate works on the south side with water and electricity, were adopted by the aldermen.

Seattle, Wash.—See "Streets and Roads."

Levis, Que.—The city council plans to build a \$100,000 filtration plant. Engineer, E. Hamel, St. Peter St., Quebec.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

San Diego, Cal.—*Henry Clark Co., 1101 E. 5th St., Los Angeles, Cal., by U. S. Government, water system at \$13,543. Bureau yards and docks, navy dept., Washington, D. C.

Witt, Ill.—*Downey & Son, Witt, for building pumping station, to cost \$3,719, and water tower, \$6,300. By city.

Argyle, Minn.—See "Sewerage."

Trommald, Minn.—*Pastoret Const. Co., 511 Lyceum Bldg., Duluth, for building water works and sewerage system, at \$61,947.

Honesteel, S. D.—*The Hennigah Engineering Co., Omaha, Neb., for water works system. City council, C. F. Jewell, auditor.

Seattle, Wash.—*F. N. Badolato, lay-

ing water mains Baker Ave. et al., \$10,367.50. Board of public works.

Clovis, N. Mex.—See "Sewerage."

East Kildonan, Man.—The National Meter Co., for fifty Empire water meters, by the municipality of East Kildonan.

LIGHTING AND POWER

Washington, D. C.—To meet the urgent need for electric power in shipyards, munition factories and other war industries, a bill, approved by the War Industries Board, was introduced by Representative Sims of Tennessee authorizing the President to construct power plants to meet immediate demands at Pittsburgh Philadelphia, New Jersey cities and other Eastern industrial centers. The bill also would authorize the President to take over privately-owned power plants, to increase their capacity or to require the owners to place all or part of their power at the disposal of the Government. An appropriation of \$200,000,000 for construction, acquisition, maintenance and operation is proposed.

Anderson, Ind.—A four-story factory will be constructed by the Remy Electric Co.

Richmond, Ind.—Council orders ordinance drawn for \$20,000 for city light plant improvements. Supt. Dillon.

Davenport, Ia.—See "Streets and Roads."

Portland, Mich.—Citizens voted to borrow the sum of \$15,000 for the purpose of making repairs on the municipal dam.

Cincinnati, O.—Construction of three new dams in the Ohio River in the Cincinnati district are among improvements to be begun this year by the government. The Cincinnati district has been allotted \$2,230,000 of the \$5,000,000 appropriation of congress, but money is to be expended during the present year, according to Col. Lansing H. Beach, United States division engineer. The locks and dams to be started are Nos. 30, 32 and 34. For construction and repair yards at Marietta \$50,000 was allotted.

Defiance, O.—The Defiance Gas & Electric Co. will increase its power facilities by the construction of an addition to its plant in which will be installed electrical producing equipment with a daily capacity of 5,000 kilowatts.

Atlanta, Tex.—The village light and ice plant was destroyed by fire, valued at about \$70,000.

Park City, Utah.—Utah Telephone Co. filed application for certificate of convenience and necessity to construct toll telephone line between Stewart's Ranch and Park City. At Park City it is planned to connect with lines of Mountain States Telephone Co. State Public Utilities Comm. will hold hearing on application at Park City Aug. 23.

Ladysmith, Wis.—Engr. L. E. Meyers, 53 W. Jackson Blvd., Chicago, Ill., prepared plans for building reinforced concrete and steel dam for Big Falls Power Co.; about \$2,000,000.

Matheson, Ont.—At a cost of \$10,000 a system of electric light and power which comprises the construction of a power station, oil engine, generator, exciter, switchboard, poles and cables, will probably be installed here. James A. Lytle, deputy clerk of municipality of the town of Matheson.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Hoboken, N. J.—*F. S. Fearon Co., Inc., 280 Madison St., New York City, N. Y., at \$19,400—50 days—building power house and motor generator room. Bureau Yards & Docks, Navy Dept., Washington, D. C.

St. Juliens Creek, Va.—Johansen & Kiersen, 205 Citizens Bank Bldg., Norfolk, Va., (1) \$12,963 (120 days), (2) add \$450, (3) add \$400, (4) add \$80, (5) add \$115, bidder Aug. 12 for building power house at Naval Ammunition Depot, St. Juliens Creek, Va., (1) price and time, work complete, using common brick and pitch and gravel or slag roofing, (2) price and time added or deducted from (1) if air lock or brick and tile are substituted for common brick in all walls, (3) price and time added or deducted from (1) if hollow terra cotta wall brick and tile are used instead of common brick in all walls, (4) price and time added or de-

ducted from (1) if asphalt and gravel for slag roofing is used instead of pitch and gravel or slag, (5) price and time added or deducted from (1) if asphalt impregnated asbestos roofing is used instead of pitch and gravel or slag. Bureau Yards & Docks, Navy Dept., Washington, D. C.

FIRE

East Moline, Ill.—City council voted to purchase necessary ladders to supplement the inadequate supply on hand at present.

Minook, Ill.—For the purchase of fire apparatus funds have been voted.

Lansing, Mich.—Bids on the contract for the proposed new fire station to be built at Sheridan St. and Pennsylvania Ave., are being asked by the police and fire commission. The building will be of the bungalow type.

Moorehead, Minn.—City preparing plans for a city hall and engine house.

Mansfield, O.—City Auditor C. E. Rhoades will receive sealed bids Sept. 12 for \$35,000 6 per cent. semi-annual 11½-year average fire bonds.

Easton, Pa.—Placing of fire extinguishers in various buildings was voted by board of control.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Sandusky, O.—City commission passed ordinance authorizing the city manager to purchase one triple-expansion pumping engine and hose cart from the Buick Co. agent here.

Sandusky, O.—American La France Fire Engine Co., for a six-cylinder motor service hook and ladder truck.

BRIDGES

Willows, Cal.—Glen county supervisors approved plans for the repair of the Butte City bridge over the Sacramento River to be made at an approximate cost of \$25,000. Plans also were approved for building nine small concrete bridges and culverts throughout the county.

Woodland, Cal.—The supervisors have rejected all bids for the erection of a modern concrete bridge over Cache Creek at Stevensford, near Woodland. The bids ranged from \$38,500 to \$43,000. They were regarded too high, and the officials have decided to build the bridge under the direct supervision of the county surveyor. The estimated cost is slightly more than \$30,000.

Silver City, Ida.—Voters will decide Sept. 4 on issuing \$67,000 bond for constructing three bridges across Snake river to unite Canyon county to Owyhee county.

Des Moines, Ia.—See "Streets and Roads."

Great Barrington, Mass.—Voters at a special town meeting voted to appropriate \$8,000 for repairs and improvement to bridges; also agreed to stand for the possible land damages in the building of a new concrete road. Edward Kelly, clerk.

Roundup, Mont.—See "Streets and Roads."

Atlantic City, N. J.—City will build a double decker bridge between the City Hall and the old Kuehnle property, which was recently purchased by the city for \$17,000, and which is to be remodeled and made into municipal offices.

Asher, Okla.—Pottawatomie county voted \$100,000 bonds, proceeds towards the construction of a high water bridge across the South Canadian River, near here. Allan Gowan, commissioner.

Eaton, O.—Construction of 6 bridges, 2 concrete culverts and a concrete bridge floor is contemplated by County Commissioners, who have directed County Engr. John Ryder to prepare plans, specifications and estimates for proposed improvements, which are as follows: Steel truss bridge, Concord road, Dixon Township, near Harry Price's; concrete girder bridge and repair of abutment, Sugar Valley road, Gasper Township, near Geo. Poos'; steel beam bridge, Camden and

Gratis road, Somers Township, near R. C. Prugh's; steel beam bridge, Washington Township, near John Herbst's; concrete girder bridge and repair of abutments, Gettysburg and Darke County road, Jefferson Township, near Jefferson Jones'; concrete girder bridge, Lewisburg and Brookville road, Harrison Township, near Mahlon Snyder's; concrete culvert, Oxford road, Jackson Township, near Jonas Treffinger's; concrete culvert, Ozias road, Washington Township, near Charles Marker's; bridge floor, Lexington road, Twin Township, near Lexington.

Walla Walla, Wash.—City commissioners have authorized the calling for bids on two concrete bridges over Garrison Creek at 9th St. Work will begin about September 1. Cost between \$2,500 and \$3,000.

Madison, Wis.—See "Streets & Roads."

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Chico, Cal.—*Thomas N. Polk, for two county bridges in this district, by the supervisors. One bridge will span Mud Creek, on the state highway, north of Chicago, \$2,473. The second, over Angel Slough on the Dayton-Litch road, \$9,943.

Marysville, Cal.—*H. A. Jenkins, of Sacramento, for the construction of a new bridge over Reed's Creek, near Artoaga, Yuba county.

Bristol, Conn.—*Donfro Bros., for erecting bridge in Franklin St., by city council, Carlton W. Buell, engr., 176 Main St.

Whitebird, Ida.—*Security Bridge Co., Lewiston National Bank Bldg., Lewiston, for building bridge over Salmon River, about \$23,000.

Monon, Ind.—The *St. Louis Bridge Co. for three bridges by the county commissioners. One over Kean's Creek in Liberty township, \$1,615, and for two bridges over the Burgett dredge ditch in Jackson township at \$2,170, including abutments.

New Bedford, Mass.—*Frank B. Sittare & Son, 111 Willis St., for bridge and loading platform, at \$2,500, by Wamsutta Mills, E. T. Pierce, treas. Ascushnet Ave. bridge, 10x90, connecting No. 627 Mills, loading platform 14x20.

Dayton, O.—*Constructing Engineer Frank Hill Smith for the construction of four concrete arches along the Big Four and Erie railway relocations. These arches range from 12 to 16 ft. each and are located near Harshman.

Nicholas, W. Va.—*Concrete Steel Bridge Co., Clarksburg, W. Va., for building 2 bridges in Nicholas county. Engr., Robt. Williamson, Jr., Richwood, W. Va.

Cobourg, Ont.—*W. J. Daley & Co., Division St., for building a concrete bridge, \$4,000. Town council.

Montreal, Que.—The *Dominion Bridge Co., Ltd., Montreal, for building two large coal handling bridges of the traveling bridge type, equipped with clam shell buckets, for the Department of Naval Service H. M. C., Dockyard, Halifax, N. S.

MISCELLANEOUS

San Pedro, Cal.—A million-dollar drydock for San Pedro to aid in war ship-building has been recommended by J. H. Rosetter, director of operations for the emergency fleet corporation, he announced here upon his arrival for an inspection of shipyards.

Gary, Ind.—Erection of a \$200,000 community hospital in Lake county, to be shared by the four adjoining counties, will be requested by members of the Lake County Anti-Tuberculosis Society at the convention of state and military medical officers here with Mayor Hodges, representatives of the council of defense, the common council, and others interested.

Muncie, Ind.—It was announced by delegates from Fort Wayne, Ind., at a convention here of the Indiana Association of Park Departments of cities of the first, second, third and fourth classes, that the city is planning to spend \$90,000 at once on parks.

New Orleans, La.—Considering the only bid made too high, the state board of engineers decided to readvertise for bids on the work of reinforcing two levees in East Carroll and one in Madison parish.

The bid received was on the Wilton levee, East Carroll. It was for 56 cts. a cu. yd. The Leyland levee, riverside enlargement, 150,000 cu. yds., will be readvertised by the Tensas Levee District Board, and the Salem levee, East Carroll, 200,000 cu. yds., and the Cabin Teale levee, Madison, 160,000 cu. yds., on which no bids were received, will be readvertised by the state board.

Pittsfield, Mass.—City sold to S. N. Bond & Co., of Boston, temporary loan bonds, \$100,000.

Newton, Mass.—Estabrook & Co., purchased an issue of temporary loan bonds to the amount of \$75,000.

Traverse City, Mich.—Governor Sleeper's plan for erecting a community house at Camp Custer, costing upwards of \$100,000, received the approval of the Northwestern Michigan War Conference at its session here, and there seems little doubt that the project will come to an early realization.

San Bright, N. J.—Capital issues committee, Washington, D. C., has approved the borough's \$50,000 bond issue for beach front protection. Mayor P. Hall Packer.

Germantown, O.—Sealed proposals received by Village Clerk Chester A. Eby, Sept. 17, for the purchase of bonds in the aggregate sum of \$17,000, for the purpose of supplying a deficiency in the revenue of the village.

Shawnee, Okla.—City Clerk George B. Caruth will receive sealed bids Sept. 1 for \$65,000 5 per cent. hospital bonds.

Erie, Pa.—City has obtained consent of Capital Issues Committee of War Finance Board for issuance of \$22,000 worth City Hall improvement bonds for remodeling of police station. Plans for remodeling of basement of City Hall and providing additional police facilities by doubling cell capacity have been prepared by Architect Wm. Frank. Park Director, Kinney.

Homestead, Pa.—The Carnegie Steel Co. to furnish housing for employees at Homestead; already contracts for 150 duplex houses to cost about \$800,000 have been let and more than \$200,000 more will be spent.

New Milford, Pa.—The Grange National Bank of Milford successful bidder for an issue improvement bonds, \$7,000. H. J. Tiffany, Boro. Secy.

Newport, R. I.—Bureau of yards and docks, Washington, D. C., receiving bids Aug. 26 for the construction of the naval training camp at Coddington Point, Newport.

Clinchfield, Va.—A \$5,000,000 Government plant, the nature of which has not been divulged, is to be erected at Clinchfield on the Carolina-Clinchfield & Ohio Railroad.

Seattle, Wash.—Chief Engineer Nicholson of the Port of Seattle commission is preparing working drawings of the proposed harbor improvements at Smith's Cove, which will be rated on Sept. 10. Plans call for the widening of the present dock 110 ft. or 55 ft. on each side of the present approach and extending this 1,200 ft. to the short line. Between the present pier and Magnolia Bluffs another pier 2,700 ft. long and 365 ft. wide will be constructed and a channel between the two dredged of approximately 2,000,000 cu. yds. of material. Considerable bulkheading will be involved in this. The new structure will have about 4½ miles of trackage and will support two warehouses each 120x100 ft. in dimension. This unit of the project is estimated to cost about \$2,000,000. The proposed development of the Smith's Cove terminal will provide for the following: One pier 2,700 ft. long and 365 ft. wide; pier extension, 1,200 ft. long and 110 ft. wide; two warehouses, each 120x1,000 ft.; 4½ miles of railroad track; 2,000,000 cu. yds. dredging; bond issue between \$2,500,000 and \$3,000,000 to be voted on Sept. 10.

Seattle, Wash.—Issuance of street railway utility bonds in the sum of \$1,200, is proposed in a bill introduced at a special meeting of the city council.

Bridgeport, B. C.—Council at a recent session appropriated \$7,000 for the hard surfacing of a railway between Lulu Isl. and bridge and Woodward's Landing. A similar amount will be paid by the government.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Washington, D. C.—The department of labor authorizes the following: The bureau of industrial housing and transporation announces the following awards

of contracts at Bethlehem, Pa., to the Whitney Co., New York City, for the construction of 1,193 houses. Seven Pines, Va., to the Owen-Ames-Kimball Co., Grand Rapids, Mich., for the construction of 100 ready-cut houses.

Boston, Mass.—Standard Oil Co., 20 Broadway, New York City, for furnishing 100,000 gals. 45% asphaltic oil at 12½ cts. per gallon, plus 1½ cts. per gallon. *Gig Fuel & Fertilizer Co., Inc., 45 William St., New York City, for applying, furnishing 10,000 gallons non-asphaltic road oil, 13½ cts. per gallon. Board contract and supply.

Portsmouth, N. H.—C. M. Leach, P. O. Box 2225, Boston, Mass., (1) \$4, (2) \$12, (3) \$150, (4) \$150, (5) \$3, (6) \$150, (7) \$27, (8) \$43, (9) \$70, (10) \$1, (11) \$10, (12a) \$600, (12b) \$700, (c) \$300, (d) \$53, (e) \$500, (13) \$600, (14) \$2, (15) \$65 (100 days). Weiss Constr. Co., 40 Court St., Boston, Mass., (1) \$5, (2) \$13, (3) \$400, (4) \$400, (5) \$3.50, (6) \$225, (7) \$25, (8) \$25, (9) \$30, (10) \$45, (11) \$0.5½, (12) \$2,740, (13) \$4,250, (14) \$3.25 (100 days); bidders intake tunnel and foundation earth and loose rock excavation, (2) rock excavation, (3) sheeting and shoring, (4) sheet piling, (5) underdrain, (6) foundation lumber, (7) concrete for tun-

nel bed), (8) concrete for pump house foundations, (9) reinforced concrete tunnel, (10) concrete floor, (11) reinforcing steel, (12) metal work, (13) sluice gates and stands, (14) backfill, (15) concrete tunnel, alternative for (9). Bureau yards and docks, navy department, Washington, D. C.

Pittsburgh, Pa.—Mellon Stuart Co., with offices in the Henry W. Oliver Bldg., for erection of barracks of 20x19½ ft. each; will be one-story and arranged in pairs with a passageway connecting each pair in the shape of the letter H, on Neville Island.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS				
Mass.,	Boston	noon, Aug. 26	Paving with granite block	Thos. F. Sullivan, Commr. of Pub. Wks.
N. J.,	Newark	3:30 p.m., Aug. 27	Furnishing and laying concrete curbing	Co. Engr.
N. J.,	Jersey City	2 p.m., Aug. 27	Repairing pavement on Lincoln highway	Co. Engr.
Mass.,	Boston	noon, Aug. 28	Paving with granite block on two streets	Thos. F. Sullivan, Commr. of Pub. Wks.
Wash.,	Kalama	2 p.m., Sept. 3	Surfacing with gravel	Co. Engr.
WATER SUPPLY.				
N. J.,	Boonton	8 p.m., Aug. 28	Constructing pumping station complete, including one 2-in. and one 4-in. electrically driven direct connected centrifugal pumps	Clyde Potts, Engr., 30 Church St., N. Y. City.
Wash.,	Kirkland	Sept. 5	Laying 4-in. water mains	Albro Gardner, Jr., Town Engr.
LIGHTING AND POWER.				
O.,	Marshallville	Sept. 7	Repairing and furnishing machinery for municipal electric light system	F. E. Kieffer, Vil. Clk.
BRIDGES.				
R. I.,	Providence	noon, Aug. 28	Erecting reinforced concrete arch bridge, 56 ft. long, 30 ft. wide, with 40-ft. span; removing present structures and realigning highway	State Bd. of Pub. Roads.
Mass.,	Boston	noon, Sept. 3	Rebuilding bridge in West Roxbury	Room 511, City Hall Annex.

STREETS AND ROADS.

Mesa, Ariz.—A petition is being circulated for paving South Macdonald St. to the railroad in two sections of 20 feet each with a parked space down the center.

Darien, Ga.—McIntosh county will on Sept. 11 vote on issuing \$48,000 road and bridge bonds.

Chicago, Ill.—Cook county's road, series P, bonds to the amount \$150,000 have been sold to the Harris Trust & Savings Bank of Chicago. Henry A. Zender, superintendent, public service.

Richmond, Ind.—Plans for making a permanent walk from the east entry of Glen Miller park to the first spring were arranged by the board of works. Civil Engineer Davis.

Red Wing, Minn.—Grading of Central Ave. to Hawthorne St., recommended by the board of public works, was ordered; cost estimated at \$601.20; and curbs and gutters on Bluff St. from 7th to Main; cost, \$2,068.86. City Clerk Irvine.

Newark, N. J.—Board of commissioners adopted resolution Aug. 15 to order the paving of Woodland Ave., from S. 10th St. to S. 13th St., and Oriental Pl., from Oriental Ter. to Mt. Pleasant Ave., with 6-inch concrete pavement; Oriental Ter., from Oriental Pl. to Oriental St., with asphalt pavement on a 6-inch concrete foundation. Thomas L. Raymond, director.

Paterson, N. J.—Resolutions are now being prepared providing for the sale of Passaic county road bonds to the amount \$238,000, which the capital issues committee has approved. Geo. W. Botbyl, clerk, board of freeholders.

West New York, N. Y.—For the following bonds, sealed bids will be received Aug. 27: Assessment, \$210,772.65; paving, \$139,197.17; fire apparatus, \$30,000; school, \$67,000; school, \$16,000. Town clerk, Charles Swensen. Bonds have been submitted to the capital issues

committee at Washington, D. C., for approval.

New Rochelle, N. Y.—The following bond issues have been submitted by the city to the capital issues committee for approval: School, \$64,500; general street improvement, \$87,030; dock, city yard, \$14,400; parklet, Franklin Ave., \$1,400; city yard improvement, \$1,300; Neptune road resurfacing, \$2,637.

Minot, N. D.—See "Water Supply."

Cambridge, O.—City Auditor J. J. Calvert receiving bids Sept. 5, street repair bonds, \$20,000.

London, O.—Village Clerk J. W. Byers taking bids Sept. 9, North Main St. improvement bonds, \$17,000.

Tiro, O.—Sealed proposals received Aug. 27 for the following bonds: BeVier road, \$5,000; Marsh road, \$5,000. W. W. Davis, clerk, Auburn township trustees.

Woodfield, O.—Monroe county receiving bids Sept. 2, Intercounty highway No. 104 bonds, \$16,000. I. O. Swallow, auditor.

Youngstown, O.—See "Water Supply."

Klamath Falls, Ore.—Surveying of the new road from the Shippington highway via the Pelican Bay sawmill to the Fort Klamath road has been completed by State Engineer J. H. Scott, according to County Road Supervisor Thomas Dixon, and it is expected bids for improvement will be advertised very soon.

Houston, Tex.—County commissioners authorized the taking of bids for hauling shell and gravel and building up that portion of the La Porte road between Deer Park, Strang and Deepwater; also voted to invite bids for the completion of about 600 feet of the Webster Airline road, the work to include hauling and placing of shell and putting on bituminous topping.

Meridian, Tex.—Bosque county voted in favor of the proposition to issue road bonds, \$40,000. E. H. Young, county clerk.

Roanoke, Va.—Thirteenth St., S. W.,

between Campbell Ave. and the Virginia Avenue bridge, is to be improved. Mayor Broun signed the resolution providing for the necessary repairs.

Kalama, Wash.—Board of county commissioners of Cowlitz county receiving bids near the 1st of September for the surfacing with gravel of permanent highway No. 4, being the Martin's Bluff section of the Pacific highway, from station 215 to station 270.

Elkins, W. Va.—Randolph county decided at an election on July 27 to issue Roaring Creek district road bonds, \$92,000.

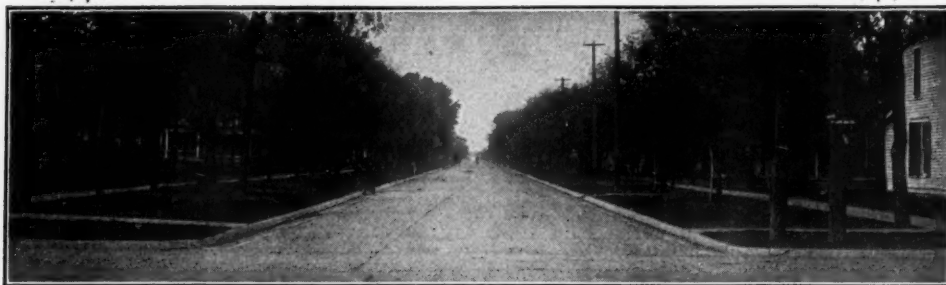
Green Bay, Wis.—Brown county commissioners contemplate the issuing of road bonds, \$270,000.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Boston, Mass.—U. Grande, at \$1,229.13, for artificial stone sidewalks in Washington St., from Haymarket Sq. to Elm St., etc. Board of public works.

Coquille, Ore.—The Coos county court has opened all the bids received for the various road projects advertised last month. For the Powers bridge the bids were as follows: Moon & Gidley, Marshfield, \$14,309; Curtis Gardiner, Portland, \$13,003.50; E. D. Pleps, Oak Grove, \$13,900. For the Kentucky slough project Dean & Brown were the only bidders. They would furnish the gravel and put it on the road at \$6 per cubic yard, or furnish the gravel and leave the rest for the county at \$3 per yard. For the Bunker Hill project the following bids were made. Moon & Gidley, \$150 per cubic yard for earth excavation, \$3.08 per cubic yard for concrete, and \$1.58 per square yard for macadam; total bid aggregate, \$20,307.22. Dean & Brown, earth excavation, \$1.45 per cubic yard, \$3.06 for concrete, \$1.27 for macadam, and 70 cents for excavating for macadam. Total, \$18,835.19.



"Practical Street Construction"

A New Book

Many books have been written upon paving streets. Others upon artistic treatment, but this is the only one treating of alignment, grade and cross section, the location of sewers and other underground construction, the above ground appurtenances, such as manholes, fire hydrants, fire alarm boxes, street signs and a score of other features that go to make up a complex, modern city street.

"Practical Street Construction" considers each in respect to its interrelation with all others. Each chapter is of real practical value. Diagrams and photographs are used in abundance—never merely for decorative purposes but for the instructive ideas which they illustrate.

Chapters include:

Planning Street Alignment
Diagonal Thorofares
Planning Thorofares
Street Widths
Sidewalk Widths
Gutters
Local and Elastic Streets
Street Cross-sections
Motor Traffic and Street Grades
Intersection Grades
Sidewalks

Written by A. Prescott Folwell

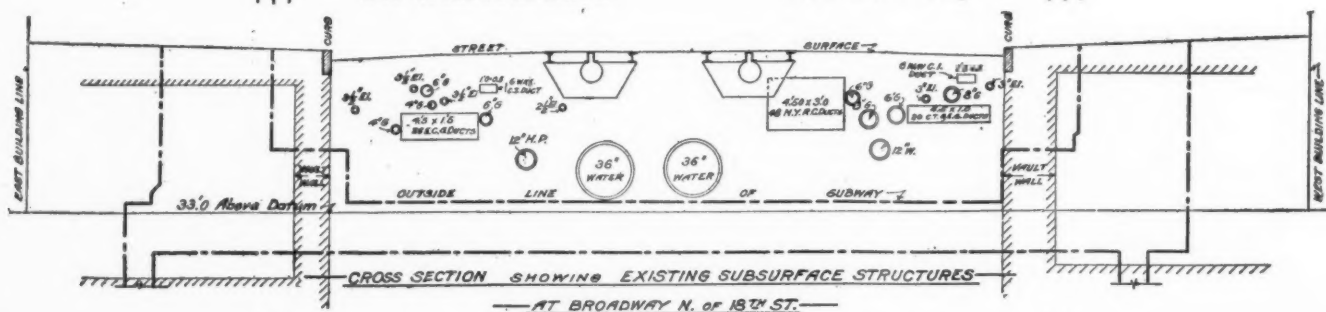
242 pages—151 illustrations

Price \$2.00

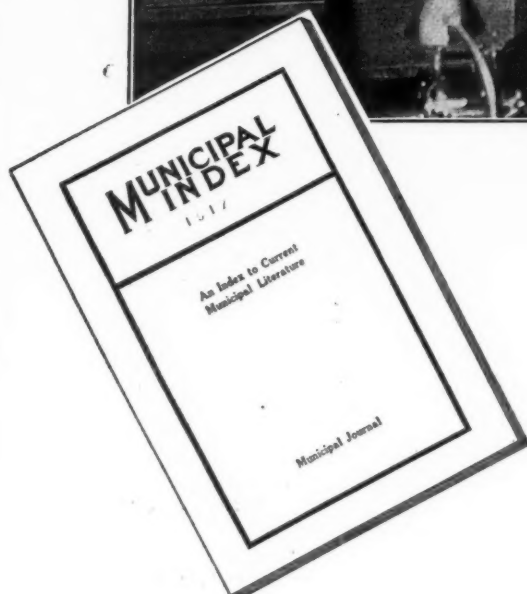
MUNICIPAL JOURNAL
(Publisher)

243 West 39th Street

New York City



The Municipal Index for 1917



An Index to Leading Articles on Municipal Subjects Published in 1917 on

Paving

Sewerage

Sanitation

Water Supply

Lighting

Fire

Police

Street Cleaning

Government

Finance

City Planning

Structures

*A municipal
reference
library in
itself.*

FEW cities can maintain a municipal reference library with such splendid facilities as that of New York City. Few city officials, municipal engineers and consulting engineers could spare time to avail themselves of its opportunities.

A knowledge of modern progress obtainable only through the current periodicals is absolutely indispensable to efficient handling of municipal affairs, whether in an administrative or a consulting capacity. The latest and best thought of the best men in the field is always at your command through the new 1917 Municipal Index in convenient, classified and completely indexed form for full and easy reference.

Price, \$1.00 Sent on approval

MUNICIPAL JOURNAL, 243 W. 39th Street, New York

OFFICIAL ADVERTISING

"Reaches Most Bidders at the Least Cost"

Rate, \$2.00 an inch an insertion

Why pay 50 to 80 per cent. more in other papers? Our results are BETTER. Copy reaching us by 10 A. M. Thursday will go in issue mailed the next day.

Bids received until September 5, 1918.

Pavement Reconstruction

Pennsylvania State Highway Department, Harrisburg, Pa.—Sealed proposals will be received at said office until 10:00 A. M., September 5, 1918, when bids will be publicly opened and scheduled and contracts awarded as soon thereafter as possible for the reconstruction of the following pavements: 9,550 feet of One Course Plain Cement Concrete in Venango County; 5,600 feet of One Course Plain Cement Concrete in Lancaster County; 2,085 feet and 9,156 feet of One Course Plain Cement Concrete and 404 feet of Hillside Vitri-fied Block in Westmoreland County; 26,112 feet of either Vitri-fied Block on a Concrete Foundation or One Course Plain Cement Concrete in Fayette County, and 7,783 feet of One Course Plain Cement Concrete and Hill-side Vitri-fied Block on a Concrete Foundation in Warren County. Bidding blanks and specifications may be obtained free and plans upon payment of \$2.50 per set, upon application to State Highway Department, Harrisburg. No refund for plans returned. They can also be seen at office of State Highway Department, Harrisburg; 1001 Chestnut Street, Philadelphia, and 904 Hartje Building, Pittsburgh, Pa. J. D. O'NEIL, State Highway Commissioner.

Bids received until August 20, 1918.

Notice to Steel Pipe Contractors

JERSEY CITY, N. J.

Sealed proposals will be received by the Board of Commissioners of Jersey City, N. J., TUESDAY, AUGUST 20, 1918,

at 2:00 P. M., in the Assembly Chamber, City Hall, Jersey City, N. J.,

FOR FURNISHING AND DELIVERING 34,590 LINEAL FEET OF 72-INCH RIVETED STEEL PIPE FOR USE BY JERSEY CITY, N. J.,

(half of this work to be finished by January 1, 1919) in accordance with plans and specifications on file in the office of the City Clerk, City Hall, Jersey City, N. J.

Blank forms of bid showing estimates of quantities and agreements of sureties must be obtained in the office of the Director of Streets and Public Improvements, City Hall, Jersey City, N. J., or Clyde Potts, Consulting Engineer, 30 Church Street, New York City.

Proposals must be enclosed in sealed envelopes, endorsed "Proposal for 72-Inch Riveted Steel Pipe," directed to this Board and handed to the City Clerk in open meeting when called for in the order of business relating to sealed proposals.

The bonds required to be furnished on proposals (and a possible subsequent contract) are those of some surety company authorized to do business in the State of New Jersey, or a certified check will be accepted in lieu of bond. All bonds must comply with the provisions of Chapter 75, Laws of New Jersey, 1918.

The Board reserves the right to reject any or all proposals if it is considered for the best interests of the City so to do.

BY ORDER OF THE BOARD OF COMMISSIONERS OF JERSEY CITY, N. J.

DANIEL O'REGAN,

Acting City Clerk.

Dated City Clerk's Office, Jersey City, N. J., August 6, 1918.

Bids received until September 4, 1918.

State Highway Work

STATE OF NEW JERSEY
STATE HIGHWAY COMMISSION

Notice is hereby given that sealed bids will be received by the State Highway Commission of New Jersey for the improvement of the following:

State Highway Route No. 6, Mantua-Woodbury Section, Gloucester County—Bituminous Concrete Pavement (Topeka); estimated 12,666 square yards.

State Highway Route No. 13, Section No. 2, Middlesex and Somerset Counties—Concrete Pavement; estimated 47,800 square yards.

Bids will be opened and read in public at the office of the State Highway Commission, Broad Street Bank Building, Trenton, N. J., on Wednesday, September 4, 1918, at 10:30 A. M.

Bids must be accompanied by a certified check for not less than ten per cent. (10%) of the amount of the bid, and must be delivered at the above place on or before the hour named. Copies of standard proposal form will be furnished on application.

Each bidder must accompany his bid with a certificate from a surety company, duly authorized to do business in this State, stating that such surety company will provide said bidder with a bond in such sum as is required in, and in accordance with, the provisions of said specifications, conditioned for the faithful performance of the provisions of the contract and specifications.

For further information apply to State Highway Department of New Jersey.

By order of the State Highway Commission.
A. LEE GROVER, Chief Clerk.

PROPOSAL ADS in

Municipal Journal

Bring Results

SEWERAGE.

Lancaster, N. Y.—H. A. Kahler & Co., New York, successful bidders for following bonds: Water extension, \$15,000; sewer extension, \$16,000. T. A. Smith, village treasurer.

East Youngstown, O.—Aug. 26 village receiving bids for the following bonds: Fire apparatus, \$9,000; Tremble Ave. sewer, \$6,320; Bright Ave. sewer, \$5,950. Joseph E. Julius, village clerk.

Youngstown, O.—See "Water Supply."

Milwaukee, Wis.—The Second Ward Savings Bank, of Milwaukee, and Halsey, Stuart & Co., of Chicago, jointly, were the successful bidders for the following bonds: Sewer, \$200,000; bridge, \$200,000; school, \$200,000; harbor improvement, \$150,000. Louis M. Kotecki, city comptroller.

Manville, Wyo.—See "Water Supply."

Santiago de los Caballeros.—City council wishes to contract for the installation of a sewerage system here which has been authorized by the military government of the Dominican Republic. The work will be carried out in accordance with plans prepared by Engineer Bogaert. The estimated cost is \$160,000, to be divided as follows: For iron materials, \$30,000; cement, \$54,000, and labor, \$76,000. It is desired that work be commenced about the 1st of November, 1918, and completed within 18 months.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Boston, Mass.—*D. Vozzella for sewerage works, Catherine St., between Florence and Meyer Sts., and Meyer St., West Roxbury; \$8,544. Board of Pub. Works.

WATER SUPPLY.

Le Roy, Ill.—City decided at an election to issue water plant improvement bonds; \$15,000. Claude E. Dawson, city clerk.

Lancaster, N. Y.—See "Water Supply."

Minot, N. D.—City has sold the following bonds voted during July, 1917, to the Wells-Dickey Co. at par: Reservoir, \$85,000; water works plant, \$20,000; street dept., \$6,000; fire dept., \$25,000; city hall, \$50,000. A. D. Hagenstein, city auditor.

Cleveland, O.—R. M. Grant & Co., of New York, were the successful bidders for the following bonds: Water, \$330,000; Rapid Transit, \$50,000; Garbage, \$50,000; Hospital, \$70,000. C. S. Metcalf, commissioner of accounts.

Youngstown, O.—Sidney Spitzer & Co., Toledo, have purchased its water im-

provement bonds, \$200,000, issued by the city. The following bonds were not awarded: Park Improvements, \$8,000; Highway and Sewer, \$25,000. J. R. Edwards, city auditor.

Piqua, O.—City defeated its proposition to issue \$250,000 in bonds for the reconstruction of the waterworks system.

Manville, Wyo.—This town has sold to Sweet, Causey, Foster & Co., of Denver, the following bonds offered July 8: Water Extension, \$20,000; Sewer, \$17,000. O. M. Bartholma, clerk.

Tilsonburg, Ont.—Town council contemplates the installation of an electric motor and pumps to supplement the present pumping plant of the town waterworks.

LIGHTING AND POWER

Border City, N. Y.—Fire following an explosion at the plant of the Empire Coke Company here near Geneva, caused a loss estimated at upward of \$150,000. The company supplies gas to Geneva, Auburn, Seneca Falls and other nearby towns.

EQUIPMENT BARGAINS

Air Compressors

New and used Belt and Steam Driven
Ingersoll-Rand Air Compressors from
50 to 400 cu. ft. capacity.

*Immediate delivery from
Indianapolis stock*

HARRIS AIR PUMP CO.
Indianapolis, Ind.

Calls for Bids

published in
These Columns
in
Municipal Journal
Save

Big Money on Contracts
and Purchases

FIRE EQUIPMENT.

Atwater, Cal.—Board of trade is taking steps to organize a fire protective system. A subscription of over \$1,000 has been pledged by various citizens for equipment and a volunteer fire department for the town will be organized.

West New York, N. J.—See "Streets and Roads."

Minot, N. D.—See "Water Supply."
East Youngstown, O.—See "Sewerage."

BRIDGES.

Darien, Ga.—See "Streets and Roads."
Wapakoneta, O.—Auglaize county commissioners here authorized the issuance bridge bonds; \$8,000.

Baker, Ore.—The county court of Baker county receiving bids in September for the construction of street bridges, one

Rates

Equipment Ads

1 inch—\$2.50
4 inches—\$2.40 an inch
8 inches—2.30 an inch
15 inches—2.20 an inch
30 inches—2.10 an inch
98 inches—2.00 an inch

Proposal Ads

\$2.00 an inch an insertion

FIRST—Get Bulletin 237—or, Wire

ZELNICKER IN ST. LOUIS

Before buying or selling

RAILS

Locomotives, Cars, Tanks, Machinery, Piling, Etc.
What have you for sale?

"Equipment Bargains"

Means
Bargains for YOU

at the McCarthy place, on the North Powder road; one on Deer Creek, just east of McEwen, and one in Pine Valley about a mile north of Halfway.
Milwaukee, Wis.—See "Sewerage."

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)
Coquille, Ore.—See "Streets and Roads."

MISCELLANEOUS.

Owensburg, Ind.—Bids received September 10 by trustee of Jackson twp., Greene county, for sale \$2,000 twp. warrants, 6 per cent, four years. Will H. Radcliff, trustee.

Davenport, Ia.—Alderman A. C. Ballow in a conference with mayor C. M. Littleton suggested the purchase of a grading machine; cost \$4,000.

HOISTING ENGINES

	Price
1—6½x10 American DCDD, with boiler....	\$1,000
1—7x10 Lidgerwood DCDD, with boiler....	1,100
1—7x10 Lambert, 3 drum, with boiler....	1,000
1—8x12 Alundy DCDD, with boiler....	1,500
1—9x10 Lidgerwood, 3 drum, 32" drums, without boiler	1,900
With boiler	2,500
1—5x8 DCDD Reversible O&S, with vertical engine, without boiler.....	850
With boiler	550
1—7x10 Lambert DCDD, with boiler.....	1,100

COMPRESSORS

	Price
1—12x12 Laidlaw-Dunn-Gordon, belt driven, capacity 300'	\$750
1—12x12x16 Ingersoll, straight line, steam driven, capacity about 300' at 80 to 100 lbs.	600
1—Sullivan, 2 stage air, simple steam, capacity 1800' at 80 to 100 lbs.....	2,500
2—14x12 Bury Duplex, belt driven, capacity about 550' at 80 to 80 lbs., each.....	1,000
1—14x16x10x16 Sullivan, 3 stage air, simple steam, capacity 600' at 80 to 100 lbs....	1,500
1—14x9x10 Bury, 2 stage, belt driven, capacity 350'	1,500
1—Ingersoll-Rand Imperial Type XB2, 500'..	2,000

DRAGLINES

	Price
1—Monaghan-Walker steam machine, with 50' boom, 1½ yd. bucket, almost new....	\$7,000
1—Flory outfit engine 10x12 heavy dragline type boiler, firebox 150 lb. pressure; boom, 60'; steel bucket, 2 yd.; new, 1917.....	9,000
1—24 Bucyrus, with 85' boom.....	—

Machinery Warehouse & Sales Co.
791 Old Colony Bldg., Chicago, Illinois

Petersburg, Neb.—Village voted in favor of issuing town hall bonds, \$4,000. Gus Diers, clerk.

West New York, N. J.—See "Streets and Roads."

Albany, N. Y.—Board of health and a special committee of the common council have decided to communicate with E. M. Jones, president of St. Louis Odorless Garbage Creamatory Company, as to specifications, plans and the cost to the city of erecting such a plant. If satisfactory city will call a taxpayers' election. Mayor Hoffman.

Binghamton, N. Y.—Hospital bonds to the amount of \$30,000 has been authorized by city council.

New Rochelle, N. Y.—See "Streets and Roads."

Minot, N. D.—See "Water Supply."

Celina, O.—Village taking bids Sept. 3 refunding bonds, \$10,000. J. M. Winter, clerk.

Cleveland, O.—See "Water Supply."
Youngstown, O.—See "Water Supply."

Books on Street Cleaning and Refuse Disposal

Municipal Engineering Practice.
By A. Prescott Folwell.

This book just published, gives the latest and most complete data on street cleaning, snow removal and refuse collection and disposal. Eighteen pages are devoted to street cleaning and snow removal, while the subject of city wastes, methods of disposal, costs of collection, etc., are treated thoroughly in about 50 pages. 422 pages; 113 illustrations. Price, \$3.50.

Disposal of Municipal Refuse.
By H. De B. Parsons.

Treats thoroughly the whole problem of municipal garbage and refuse removal. 186 pages; 73 illustrations. Price, \$2.00 Net.

Modern Method of Street Cleaning.
By G. A. Soper.

Also compares American and European methods of cleaning and results obtained. 200 pp.; 100 illustrations. Price, \$3.00.

Collection and Disposal of Municipal Waste.

By William F. Morse.

A valuable and practical book. Describes every operating plant and gives data on its operation. Methods and quantity of collection and treatment are described. 500 pages. Price, \$5.00.

Garbage Crematories in America.
By William Mayo Venable.

An authority on the subject. 200 pages; 45 illustrations. Price, \$2.00 net.

Municipal Journal, 243 West 39th St., New York

WATER WORKS EQUIPMENT

ABSOLUTE RELIABILITY AND OPERATING ECONOMY ARE THE MOST ESSENTIAL REQUIREMENTS OF PUMPING ENGINES

The great number of Allis-Chalmers Pumping Engines in continuous service, 365 days a year, demonstrates their reliability.

Official duty tests and published annual reports of station operating costs prove their HIGH ECONOMY.

*Is There Any Municipal Problem
of Greater Importance
Than the Water Supply of a City?*

Allis-Chalmers Manufacturing Company

Pumping Engine Department, Milwaukee, Wis.

For all Canadian business refer to
Canadian Allis-Chalmers, Limited, Toronto, Ont.

FOREIGN REPRESENTATIVES:

Frank R. Perrot, 883 Hay Street, Perth, W. A.
Frank R. Perrot, 204 Clarence Street, Sydney, N. S. W.
H. I. Keen, 732 Salisbury House, London Wall, E. C., England
W. R. Judson, Huerfanos 1157, Casilla 2653, Santiago, Chile

"Turnkey Jobs"

Our Service is Complete, as our organization includes Engineers, Field Construction Forces and Factory Facilities which puts the burden of getting results on us—Hence the Guarantee

"Water, or No Pay"

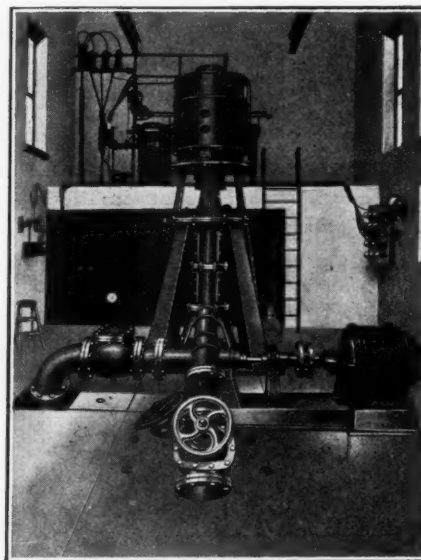
We Write It
in the
Contract

Write today
for Information
and Free Literature.

Layne & Bowler Company

"World's Largest
Water
Developers."

759 Randolph
Building
Memphis, Tenn.



SERVICE AND FIRE PROTECTION

Layne Deep Well Turbine Pump ordinarily operating against service pressure by-passing horizontal Turbine. Horizontal Turbine is cut in for fire pressure.

MICHIGAN PRODUCTS

Fire Hydrants	Shear Valves
Gate Valves	Tide Valves
Sluice Gates	Sleeve Valves
Check Valves	Indicator Posts
Foot Valves	Valve Boxes

Flower-Stephens Manufacturing Co.
105 Parkinson St., Detroit, Mich.

SLUICE GATES Shear, Flap and Butterfly Valves FLEXIBLE JOINTS COLDWELL-WILCOX CO

Box 574

NEWBURGH, N. Y.



DID YOU SEE OUR AD IN THE ISSUE OF AUG. 10th?

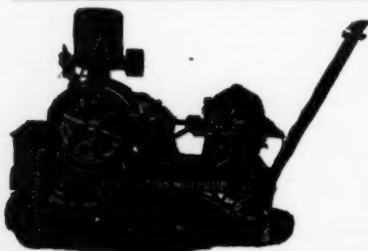
It told a story of water waste and the means of preventing it by a COLE RECORDER.

Write for particulars.

The Pitometer Company

27 Elm Street

NEW YORK



90% Saving in Pump Operating Cost if you use The Parker Contractor's Mud Pump

It has double the capacity of the hand-power pump and can be operated at one-tenth the cost. It will raise and force from 6000 to 8000 gallons of water per hour on less than one quart of gasoline. The truck is solid, is easily transported around the job.

Let us tell you more in our Booklet.

A. A. PARKER, Waterford, N. Y., Sole Manufacturer
NEW ENGLAND AGENTS: Persin, Seamans & Co., 57 Oliver Street, Boston, Mass

Northwestern Steel Forms

Write
for
Bulletin 22

Northwestern Steel Forms

For concrete tile, culverts, flumes, sewers, etc. Used and recommended by leading engineers and highway commissioners for all hard-to-do jobs. There is a Northwestern Steel Form designed for every purpose and to meet every problem. It costs nothing to find out what they can do and save you in your work.

Northwestern Steel & Iron Works

(Capital \$200,000)

Eau Claire, Wisconsin



THIS
The Sanitary Way
or
the Old
Germ Breeder
OR THIS

ODORLESS SEWER BASINS

mean better public health and a saving in labor and time in cleaning.

ODORLESS SEWER BASIN CO.
YOUNGSTOWN, OHIO



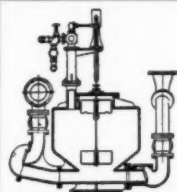
D & D Safety Cover

WM. E. DEE COMPANY

30 N. LA SALLE STREET, CHICAGO, ILL.

WE MANUFACTURE

Manhole, Catch Basin and Sewerage Castings of all kinds. We make anything in Gray Iron. Write for our prices.



SHONE SEWAGE EJECTORS

For Municipal Work

A perfect record for forty years in all parts of the world.

SHONE COMPANY

227 Institute Place CHICAGO, ILL.
Send for Bulletin P-400



AUTOMATIC MILLER SIPHONS

SAVE LABOR

FOR FLUSHING SEWERS AND DISPOSAL PLANTS
FREE ILLUSTRATED CATALOGS

PACIFIC FLUSH-TANK CO.

CHICAGO, ILL.

NEW YORK

DECARIE INCINERATORS

FOR MUNICIPALITIES AND INSTITUTIONS

—ECONOMICAL AND SANITARY—

STACY-BATES COMPANY

MEKNIGHT BLDG. SELLING AGENTS MINNEAPOLIS
WRITE FOR LITERATURE

City sewage dumped at a bathing beach without pollution after treatment by Riensch-Wurl Screens.

Full particulars to Engineers, Architects and City Officials in Bulletin G-4.

THE SANITATION CORPORATION

50 CHURCH STREET

NEW YORK CITY

FILTERS

Hypochlorite Apparatus and Water Softening Plants

The New York Continental Jewell Filtration Company

111 W. Monroe Street, CHICAGO NUTLEY, NEW JERSEY
Inter-State Bldg., KANSAS CITY New Birks Bldg., MONTREAL

Roberts Filter Mfg. Co.

Darby, Penna.

WATER FILTERS for Municipal and Industrial Plants.
Gravity and Pressure Types.

CHEMICAL DEVICES



LITTLEFORD

Tar and Asphalt Heaters

The Proof of the Heater is in the Heating.

LITTLEFORD BROS.

451 East Pearl St., Cincinnati, Ohio

CUMMER ASPHALT PLANTS

All types and sizes

The F. D. Cummer & Son Co., Cleveland, O.

BUYERS' CLASSIFIED DIRECTORY

of Names and Addresses of Firms from Whom to Buy Materials, Appliances and Machinery Needed by Municipal Departments and Contractors

Building Stone

- *Badger Crushed Granite Co., 133 W. Washington St., Chicago, Ill.

Cement

- *Alpha-Portland Cement Co., Easton, Pa.
- *Atlas Portland Cement Co., 30 Broad St., N. Y.
- *Lehigh Portland Cement Co., Allentown, Pa.

Contractors' Equipment

(See Paving Machinery also.)

CRANES AND HOISTS.

- *The Brown Hoisting Machy. Co., Cleveland, O.
- *Machinery Warehouse & Sales Co., Old Colony Bldg., Chicago, Ill.

DUMPING BUCKETS.

- *Stuebner, G. L., Iron Works, Hancock St., Long Island City.

MOTOR TRUCKS, DUMPING.

- *Dart Motor Truck Co., Waterloo, Iowa.
- *Duplex Truck Co., Lansing, Mich.
- *Kissel Motor Car Co., 570 Kissel Ave., Hartford, Wis.

PUMPS, DIAPHRAGM.

- *Parker, A. A., Waterford, N. Y.

ENAMELED HOUSE NUMBERS.

- *The Enamel Products Co., Cleveland, Ohio.
- *Mathews Interlocking Sign Co., White Plains, N. Y.

DANGER SIGNALS.

- *A. G. A. Railway Light & Signal Co., Elizabeth, N. J.
- *The Automatic Signal & Sign Co., Canton, O.

Fire Dept. Equipment

COMBINATION CHEMICAL AND HOSE WAGONS.

- *American-La France F. E. Co., Elmira, N. Y.
- *Kissel Motor Car Co., 570 Kissel Ave., Hartford, Wis.

FIRE ALARM SYSTEMS.

- *Loper Fire Alarm Co., Stonington, Conn.

FIRE ALARM TELEGRAPH.

- *Gamewell Fire Alarm Telegraph Co., Grand Central Terminal, N. Y.

FIRE HOSE.

- *Fabric Fire Hose Co., Duane & Church Sts., New York.
- *B. F. Goodrich Rubber Co., Akron, Ohio.

PUMPING ENGINES, GASOLINE.

- *American-La France F. E. Co., Elmira, N. Y.

TRACTORS.

- *Couple Gear Freight-Wheel Co., 485 Buchanan Ave., Grand Rapids, Mich.

TRIPLE COMBINATION MOTOR.

- *American-La France F. E. Co., Elmira, N. Y.

Paving Machinery

ASPHALT PLANTS.

- *Cummer & Son Co., Cleveland, O.
- *East Iron & Machine Co., Lima, Ohio.
- *Warren Bros. Co., Boston, Mass.

CONCRETE MIXERS.

- *The Jaeger Machine Co., 400 Dublin Ave., Columbus, Ohio.
- *Koehring Machine Co., Milwaukee, Wis.
- *Northwestern Steel & Iron Works, Eau Claire, Wis.
- *Ransome Concrete Machinery Co., 1754 2d St., Dunellen, N. J.

OIL DISTRIBUTORS.

- *Austin Western Road Mach. Co., Chicago, Ill.

ROAD GRADERS.

- *Austin-Western Road Mach. Co., Chicago, Ill.
- *Koehring Machine Co., Milwaukee, Wis.
- *F. B. Zieg Mfg. Co., Fredericktown, Ohio.

ROAD ROLLERS.

- *Austin-Western Road Mach. Co., Chicago, Ill.

SCRAPERS.

- *Austin-Western Road Mach. Co., Chicago, Ill.

TAR KETTLES, ASPHALT HEATERS, ETC.

- *Littleford Bros., Cincinnati, O.
- *Warren Bros. Co., 142 Berkeley St., Boston.

Paving Materials

ASPHALT.

- *Bitoslag Paving Co., 90 West St., New York.
- *Standard Oil Co., 26 Bway., New York, N. Y.
- *Standard Oil Co., 72 W. Adams St., Chicago
- *U. S. Asphalt Refining Co., 90 West St., N. Y.

BINDERS.

- *Barrett Co., The, 17 Battery Pl., New York.
- *Standard Oil Co., 26 Broadway, New York.
- *U. S. Asphalt Refining Co., 90 West St., N. Y.

BITUMINOUS PAVEMENTS.

- *Badger Crushed Granite Co., 133 W. Washington St., Chicago, Ill.
- *Barrett Co., The, 17 Battery Pl., New York.
- *Warren Bros. Co., 142 Berkeley St., Boston.

BRICK.

- *The Barr Clay Co., Streator, Ill.
- *Terre Haute Vitified Brick Co., Terre Haute, Ind.
- *Thornton Fire Brick Co., 909 Goff Bldg., Clarksburg, W. Va.

EXPANSION JOINTS.

- *Barrett Co., The, 17 Battery Pl., New York.
- *Truscon Steel Co., Youngstown, O.

JOINT PROTECTION (CONCRETE).

- *Truscon Steel Co., Youngstown, O.

OIL.

- *Barrett Co., The, 17 Battery Pl., New York.
- *Indian Refining Co., 244 Madison Ave., New York, N. Y.
- *Standard Oil Co., 26 Broadway, New York.
- *Standard Oil Co., 72 West Adam St., Chicago, Ill.
- *U. S. Asphalt Refining Co., 90 West St., N. Y.

PAVING BLOCK.

- *Badger Crushed Granite Co., 133 W. Washington St., Chicago, Ill.

POWDER.

- *Du Pont, de Nemours & Co., Wilmington, Del.

WOOD PAVING BLOCKS.

- *Jennison Wright Co., Toledo, Ohio.
- *Wyckoff Pipe and Creosoting Co., 30 E. 42d St., New York.

Public Lighting

INSULATED WIRES AND CABLES.

- *Okonite Co., 253 Broadway, New York.

Scientific Instruments

ENGINEERS' TRANSITS AND LEVELS.

- Heller & Brightly, 1124 Spring Garden, Philadelphia, Pa.

BLUEPRINT MACHINES.

- *Wickes Bros., Dept. E., Saginaw, Mich.

Sewerage

CULVERT FORMS.

- *Northwestern Steel & Iron Works, Eau Claire, Wis.

PIPE (CAST IRON).

- *Central Foundry Co., 90 West St., New York.
- *Warren Foundry & Machine Co., 11 Broadway, New York.

PIPE CLEANING MACHINES.

- Champion Potato Machine Co., Hammond, Ind.
- *W. H. Stewart, 131 George St., Boston, Mass.

PIPE JOINT COMPOUND.

- *Pacific Flush Tank Co., Chicago & New York.
- *Standard Paint Co., New York City.

EJECTORS.

- *Pacific Flush Tank Co., Chicago & New York.
- *Shone Co., Yoemans Bros. Co., Gen. Sales Agents, 227 Institute Pl., Chicago, Ill.

NOZZLES.

- *Pacific Flush Tank Co., Chicago & New York.

PLANTS.

- *The Sanitation Corporation, 50 Church St., New York, N. Y.

SEWAGE—SCREENS.

- *The Sanitation Corporation, 50 Church St., New York, N. Y.

RODS.

- *The F. Bissell Co., Toledo, O.
- *W. H. Stewart, 131 George St., Boston, Mass.

SIPHONS AND FLUSH TANKS.

- *Pacific Flush Tank Co., Chicago & New York.

VITRIFIED FIRE CLAY SEWER TILE.

- East Ohio Sewer Pipe Co., Irondale, O.

Street Cleaning And Refuse Disposal

MANHOLES—CATCH BASINS.

- *Wm. E. Dee Co., 30 N. La Salle St., Chicago, Ill.
- *Odorless Sewer Basin Co., Youngstown, Ohio.

INCINERATORS.

- *Stacy-Bates Co., McKnight Building, Minneapolis, Minn.

MOTOR SWEEPERS.

- *Elgin Sales Corporation, New York-Chicago.

SPRINKLING WAGONS.

- *Austin Western Road Mach. Co., Chicago, Ill.

STREET SWEEPERS.

- *Austin Western Road Mach. Co., Chicago, Ill.
- *Elgin Sales Corporation, New York-Chicago.

*Advertisers—See Alphabetical Index on last white page.

BUYERS' CLASSIFIED DIRECTORY

Street Signs

- *A. G. A. Railway Light & Signal Co., Elizabeth, N. J.
- *The Automatic Signal & Sign Co., Canton, O.
- *The Enamel Products Co., Cleveland, O.
- *Mathews Interlocking Sign Co., White Plains, N. Y.

TRAFFIC SIGNS.

- *Mathews Interlocking Sign Co., White Plains, N. Y.
- *The Enamel Products Co., Cleveland, Ohio.

Water Works

AIR COMPRESSORS.

- *Machinery Warehouse & Sales Co., Old Colony Bldg., Chicago, Ill.
- *Sullivan Mch. Co., 122 S. Michigan Ave., Chicago, Ill.

AIR LIFT PUMPS.

- *Sullivan Mch. Co., 122 S. Michigan Ave., Chicago, Ill.

CORPORATION AND STOP COCKS.

- *Glauber Brass Mfg. Co., Cleveland, Ohio.

DEEP WELL PUMPS.

- *Cook, A. D., Lawrenceburg, Ind.
- *Layne & Bowler Co., 1117 Exchange Bldg., Memphis, Tenn.

FILTERS.

- *N. Y. Continental Jewell Filtration Co., Nutley, New Jersey.

- *Pittsburgh Filter Co., Pittsburgh, Pa.
- *Roberts Filter Co., Darby, Pa.

FILTRATION PLANTS.

- *Pittsburgh Filter Co., Pittsburgh, Pa.
- *Roberts Filter Co., Darby, Pa.

FLAP VALVES.

- *Coldwell-Wilcox Co., Newburgh, N. Y.

METERS.

- *Hersey Mfg. Co., South Boston, Mass.
- *Pittsburgh Meter Co., East Pittsburgh, Pa.
- *Thomson Meter Co., 110 Bridge St., Bklyn.
- *Union Water Meter Co., 33 Hermon St., Worcester, Mass.

METER BOXES.

- *Ford Meter Box Co., Wabash, Ind.
- *Pittsburgh Meter Co., East Pittsburgh, Pa.

METER TESTING MACHINES.

- *Ford Meter Box Co., Wabash, Ind.
- *Pittsburgh Meter Co., East Pittsburgh, Pa.

PIPE, CAST IRON.

- *Amer. Cast Iron Pipe Co., First National Bank Bldg., Chicago, Ill.
- *Central Foundry Co., 90 West St., New York City.
- *Clow, Jas. B., & Sons, 544 S. Franklin St., Chicago, Ill.
- *Donaldson Iron Co., Emaus, Lehigh Co., Pa.
- *Glamorgan Pipe & Foundry Co., Lynchburg, Va.
- *Lynchburg Foundry Co., Lynchburg, Va.
- *Massillon Iron & Steel Co., Massillon, O.
- *Standard Cast Iron Pipe & Foundry Co., Bristol, Pa.
- *U. S. Cast Iron Pipe & Foundry Co., Burlington, N. J.
- *Warren Foundry & Machine Co., 11 Broadway, New York, N. Y.
- *Walter A. Zelnicker Supply Co., St. Louis, Mo.

PIPE, STEEL.

- *East Jersey Pipe Corporation, Fulton and Church Sts., New York, N. Y.

PIPE, WOOD.

- *Wyckoff Pipe & Creosoting Co., 30 E. 42d St., N. Y.

PUMPS.

- *Allis-Chalmers Mfg. Co., Milwaukee, Wis.
- *Cook, A. D., Lawrenceburg, Ind.
- *Dayton, Dick, Co., Quincy, Ill.
- *Shone Co., Yoemans Bros. Co., Gen. Sales Agents, 229 Institute Place, Chicago, Ill.

SCREENS FOR WELLS.

- *Cook, A. D., Lawrenceburg, Ind.
- *Layne & Bowler Co., 1117 Exchange Bldg., Memphis, Tenn.

SHEAR VALVES.

- *Coldwell-Wilcox Co., Newburgh, N. Y.

SLEEVES AND VALVES.

- *Smith, A. P., Mfg. Co., East Orange, N. J.

SLUICE GATES.

- *Coldwell-Wilcox Co., Newburgh, N. Y.

STRAINERS.

- *Cook, A. D., Lawrenceburg, Ind.

TAPPING MACHINES.

- *Smith, A. P., Mfg. Co., East Orange, N. J.

VALVES.

- *Flower-Stephens Mfg. Co., 105 Parkinson St., Detroit, Mich.
- *Glauber Brass Mfg. Co., Cleveland, Ohio.

WASTE DETECTION.

- *The Pitometer Co., 27 Elm Street, N. Y. C.

WATER MAIN CLEANING.

- *National Water Main Cleaning Co., 50 Church St., N. Y.

WATER SOFTENING AND PURIFYING.

- *N. Y. Continental Jewell Filtration Co., 15 Broad St., N. Y.

WATER STERILIZER.

- *Electric Ozone Sterilizer Co., 726 Monadnock Block, Chicago, Ill.
- *Electro Bleaching Gas Co., 10 East 41st St., New York.

WATER STERILIZING APPARATUS.

- *Wallace & Tiernan Co., 132 Centre St., New York City.

WATER SUPPLY FROM WELL SYSTEMS.

- *Cook, A. D., Lawrenceburg, Ind.

WATER WORKS EQUIPMENT.

- *Marsh-Bothe Machinery Co., Old Colony Bldg., Chicago, Ill.

WELL DRILLS.

- *Layne & Bowler Co., 1117 Exchange Bldg., Memphis, Tenn.

HANDBOOK for

HIGHWAY ENGINEERS

Second Edition

By WILSON G. HARGER

First Assistant Engineer New York State Department
of Highways

AND

EDMUND A. BONNEY

Chief Draftsman, Division No. 5, New York State
Department of Highways

Part I is a brief treatise on Theory of Design.

Part II deals with Practice of Design and Construction.

This pocketbook has 600 pages and contains more material than the average 6x9 textbook of 800 to 1000 pages.

A Few of Its Special Features are:

Traffic rules and regulations.

A great variety of special tables and general mathematical tables.

An unusually complete set of curve tables requiring no interpolation.

Tables of quantities of materials—cement, sand, stone, binder, filler, etc., for macadam, concrete, brick and other kinds of roads.

Full and complete cost data for estimating all classes of roadwork.

Full details of construction.

Tables of earthwork, macadam, concrete, reinforcement, oils, etc. These are time-savers to the officeman.

The survey—details, suggestions, tables, examples, mapping, etc.

COMPLETE SPECIFICATIONS

PRICE \$3.00

MUNICIPAL JOURNAL

243 West 39th Street
NEW YORK

DIRECTORY OF CONSULTING ENGINEERS

Engaged in Municipal and Public Works

**ALVORD, JOHN W.
BURDICK, CHAS. B.**

Consulting Engineers
Reports, Investigations, Plans and Specifications for Water Supplies, Water Purification, Water Power, Sewerage, Sewage Disposal.
Hartford Building, Chicago

**THE AMERICAN
APPRAISAL CO.**

Milwaukee New York
Authoritative Reports and Valuations Covering Public Utility, Municipal Mineral, Industrial, Commercial and Residence Properties.

BLACK & VEATCH

Consulting Engineers
Inter-State Bldg., Kansas City, Mo.
Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations, Reports.
E. B. Black N. T. Veatch, Jr.

BROSSMAN, CHAS.

Consulting Engineer
Merchants' Bank Building, Indianapolis, Ind.
Water Supply, Sewerage and Disposal, Lighting Plants—Supervision of Construction and Operation.
Appraisals—Expert Testimony.

BURNS & McDONNELL

Consulting Engineers
Appraisals Rate Investigations
Expert Testimony Water Works
Sewerage Lighting
Clinton S. Burns R. E. McDonnell
Kansas City Inter-State Bldg.

CAIRD, JAMES M.

Assoc. Am. Soc. C. E.
Chemist and Bacteriologist
Office and Laboratory:
271 River Street, Troy, N. Y.
Water Analysis and Tests of Filter Plants

COLLINS, JOHN L.

Consulting Civil and Sanitary Engineer
WATER SUPPLY and PURIFICATION
SEWERAGE and SEWAGE DISPOSAL
Plans, Estimates and
Supervision of Construction
30 Church Street, New York City

DOW & SMITH

Chemical Engineers
Consulting Paving Engineers
A. W. Dow, Ph.B. F. P. Smith, Ph.B.
Mem. Am. Inst. Ch. Engrs.
Mem. Am. Soc. Civ. Engrs.
Asphalt, Bitumens, Paving, Hydraulic
Cement, Engineering Materials.
131-3 East 23d Street, New York

GREGORY, JOHN H.

CONSULTING HYDRAULIC ENGINEER AND
SANITARY EXPERT
170 Broadway, New York City
Reports, Investigations, Plans and Specifications for
Sewerage, Sewage Disposal, Water Supply, Water
Purification, and Garbage and Refuse Disposal.

Make 'Em Sit Up and Figure!

When bids are wanted, see that your ad gets in **more** than the local paper. Use your influence to get it in the Official Advertising columns of the **national** weekly engineering and contracting paper, **MUNICIPAL JOURNAL**.

Only a local ad leaves you powerless to smash exorbitant local prices.

You need a paper with a national circulation, one concentrated upon this particular field. That paper is **MUNICIPAL JOURNAL**, the logical medium for your calls for bids.

Your ad in this paper will bring bids from reliable firms all over the United States. They want to bid but cannot do so intelligently unless they have the details, just as the local men have.

Get your ad in this live paper. 'Twill prove a competition stimulator that will make your local men sit up and take notice.. Wake 'em up! Show 'em you're wise to their game. Make 'em sharpen their pencils and figure.

You'll save a heap, and the cost of this "price cutter" is only \$2 an inch.

MUNICIPAL JOURNAL
243 W. 39th St., New York

HAZEN, WHIPPLE & FULLER

Consulting Hydraulic and Sanitary Engineers, Water Supply, Sewerage, Drainage, Valuations, Supervision of Construction and Operation.
ALLEN HAZEN G. C. WHIPPLE
W. E. FULLER F. F. LONGLEY
C. M. EVERETT L. N. BABBITT
H. MALCOLM PIRNIE
30 East 42d Street, New York City

HERING, RUDOLPH, D.Sc.

Consulting Engineer
Water Supply, Sewage and Refuse Disposal
170 Broadway, New York City
Telephone—Cortlandt 6309

HOWARD, J. W.

Consulting Engineer
Pavements and Roads
LABORATORY ANALYSES AND TESTS
OF ALL MATERIALS
CONSTRUCTION INSPECTED
29 YEARS' EXPERIENCE
1 Broadway, New York

KNOWLES, MORRIS

M. Am. Soc. C. E.
Consulting Municipal Engineer
Planning and Construction of Industrial Towns
Water Supply, Water Purification, Sewerage and Sewage Disposal
1200 B. F. Jones Bldg., Pittsburgh, Pa.

MORSE, WILLIAM F.

Consulting Sanitary Engineer
90 West Street, New York City
Surveys, Reports, Specifications, Proposal Forms for Disposal of Waste of Municipalities, Institutions and Business Establishments, Designs for Special Furnaces for any purpose. Expert Investigation and Reports on Any Question of Waste Collection or Disposal.

POLLOCK & TABER

Consulting Engineers
Pavements, Highways, Water Supply, Drainage, Sewerage and Sewage Disposal. Designs, Specifications and Supervision.
Clarence D. Pollock { Members
George A. Taber { Am. Soc. C. E.
Park Row Bldg., New York City

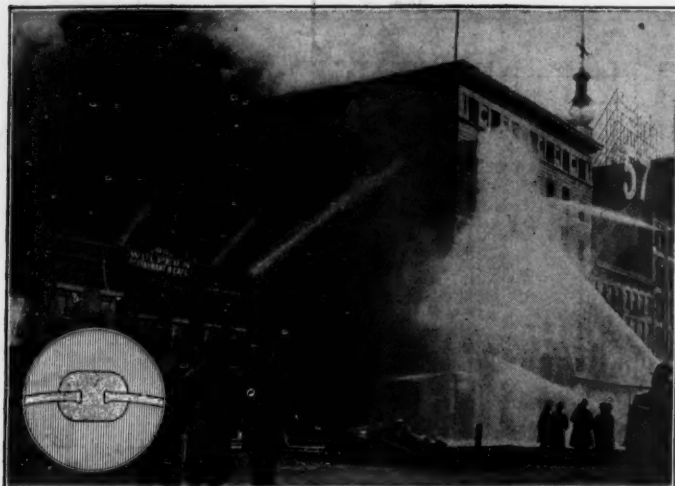
POTTER, ALEXANDER

50 Church Street, New York City
Civil and Sanitary Engineer
Specialties:
Water Supply, Sewerage and Pavements

TAYLOR, HENRY W.

26 Cortlandt Street, New York City
100 State Street, Albany, N. Y.
Consulting Engineer
Water, Sewerage, Trade Wastes, Pumping Plants

The city in need of expert counsel on any special technical problem should consult this directory of engineers who are authorities in their fields.



Insure Water Supply Against Accidents

You can never tell just when a serious fire will call for every drop of water that can be crowded on. But you can prepare for every emergency of this kind by using

LOCK-BAR STEEL PIPE

The Lock-Bar 100% Joint develops the full strength of the plate, whereas a double riveted joint develops only 70%.

The smooth interior of Lock-Bar Pipe means lower frictional resistance, consequently greater carrying

capacity, than either riveted steel or cast iron pipe. Lock-Bar Pipe is ideal for water-works installations, because it is low in first cost and has great durability. Write today for complete details on Lock-Bar Steel Pipe.

East Jersey Pipe Corporation, 50 Church Street, New York
Works: Paterson, N. J.

**Do you want
to eliminate
water-borne
TYPHOID FEVER
in your community?**



Then **sterilize** your water supply with
Liquid Chlorine (100% efficient)
applied and controlled by—

**"W&T"
APPARATUS**

The Standard Chlorinator

Send for Technical Publications with full details

Wallace & Tiernan Co., Inc.

137 Centre St., New York City

People's Gas Building, Chicago, Ill.

Canadian Representatives: The General Supply Com-
pany of Canada, Ltd., Ottawa, Montreal, Toronto,
Winnipeg, Vancouver.

Pacific Coast Representative: Kenneth Shibley, Mer-
chants' Exchange Building, San Francisco, Cal.



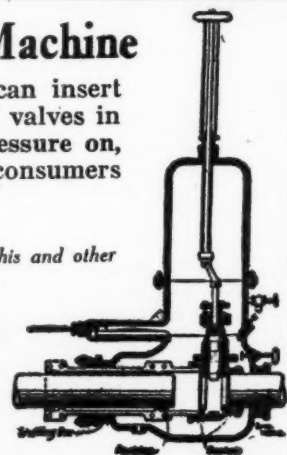
Valve Inserting Machine

With this machine you can insert new and cut out defective valves in water mains with full pressure on, avoiding annoyance to consumers and increased fire risks.

Write for complete description of this and other water works specialties.

See Sweet's Catalogue, Engi-
neering Edition, for Details and
Particulars.

THE A. P. SMITH MFG. CO.
EAST ORANGE, N. J.



**"DAYTON-DICK"
Centrifugal Pumps**



For municipal water-works, sewage pump-
ing plants, fire and booster service.

RELIABLE—ECONOMICAL—CONVENIENT

Put your pumping problems up to our engineers. This free
service—the result of years of experience—can be of real help
to you.

Write for catalog.



DAYTON DICK CO.
QUINCY, ILLINOIS

